EPSON
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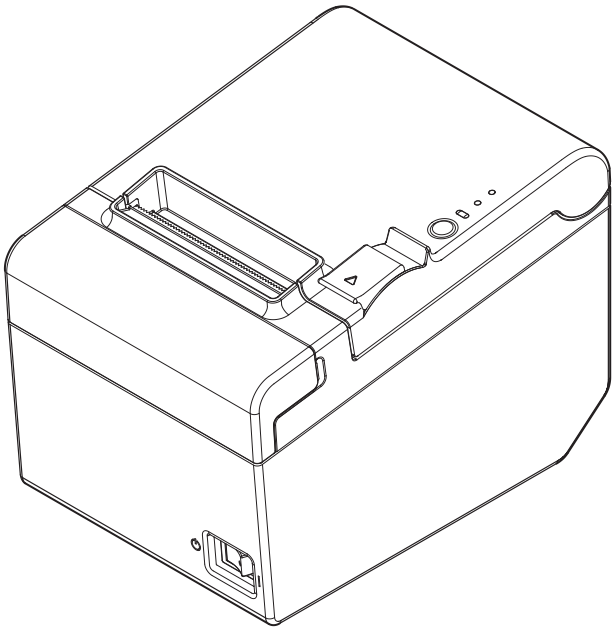
TM-T20II

Technical Reference Guide



Product Overview

Describes features and general specifications for the product.

Setup

Describes setup and installation of the product and peripherals.

Application Development Information

Describes how to control the printer and necessary information when you develop applications.

Handling

Describes how to handle the product.

Replacement of the TM-T20

Describes precautions for replacement.

Appendix

Describes interfaces, connectors, and character code tables.

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Cautions

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ESC/POS® Command System

EPSON ESC/POS is a proprietary POS printer command system that includes patented or patent-pending commands. ESC/POS is compatible with most EPSON POS printers and displays.

ESC/POS is designed to reduce the processing load on the host computer in POS environments. It comprises a set of highly functional and efficient commands and also offers the flexibility to easily make future upgrades.

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For Safety

Key to Symbols

The symbols in this manual are identified by their level of importance, as defined below. Read the following carefully before handling the product.

WARNING	You must follow warnings carefully to avoid serious bodily injury.
CAUTION	Provides information that must be observed to prevent damage to the equipment or loss of data. • Possibility of sustaining physical injuries. • Possibility of causing physical damage. • Possibility of causing information loss.
CAUTION	Provides information that must be observed to avoid damage to your equipment or a malfunction.
NOTE	Provides important information and useful tips.

Warnings

WARNING

- To avoid risk of electric shock, do not set up this product or handle cables during a thunderstorm
- **Never insert or disconnect the power plug with wet hands.**
  Doing so may result in severe shock.
- **Handle the power cable with care.**
  Improper handling may lead to fire or electric shock.
  * Do not modify or attempt to repair the cable.
  * Do not place any heavy object on top of the cable.
  * Avoid excessive bending, twisting, and pulling.
  * Do not place the cable near heating equipment.
  * Check that the plug is clean before plugging it in.
  * Be sure to push the plug all the way in.
- **Be sure to use the specified power source.**
  Connection to an improper power source may cause fire or shock.
- **Do not place multiple loads on the power outlet.**
  Overloading the outlet may lead to fire.
- **Shut down your equipment immediately if it produces smoke, a strange odor, or unusual noise**.
  Continued use may lead to fire. Immediately unplug the equipment and contact your dealer or a Seiko Epson service center for advice.
- **Never attempt to repair this product yourself.**
  Improper repair work can be dangerous.
- **Never disassemble or modify this product.**
  Tampering with this product may result in injury or fire.
- **Do not allow foreign matter to fall into the equipment.**
  Penetration by foreign objects may lead to fire.
- **If water or other liquid spills into this equipment, do not continue to use it.**
  Continued use may lead to fire. Unplug the power cord immediately and contact your dealer or a Seiko Epson service center for advice.
- **Do not use aerosol sprayers containing flammable gas inside or around this product.**
  Doing so may cause fire.

Cautions

CAUTION

- **Do not connect cables in ways other than those mentioned in this manual.**
  Different connections may cause equipment damage or fire.
- **Be sure to set this equipment on a firm, stable, horizontal surface.**
  The product may break or cause injury if it falls.
- **Do not use this product in locations subject to high humidity or dust levels.**
  Excessive humidity and dust may cause equipment damage or fire.
- **Do not place heavy objects on top of this product. Never stand or lean on this product.**
  Equipment may fall or collapse, causing breakage and possible injury.
- **Take care not to injure your fingers on the manual cutter**
  * When you remove printed paper
  * When you perform other operations such as loading/replacing roll paper
- **Do not open the roll paper cover without taking the necessary precautions, as this can result in injury from the autocutter fixed blade.**
- **To ensure safety, unplug this product before leaving it unused for an extended period.**

Restriction of Use

When this product is used for applications requiring high reliability/safety, such as transportation devices related to aviation, rail, marine, automotive, etc.; disaster prevention devices; various safety devices, etc.; or functional/precision devices, etc., you should use this product only after giving consideration to including fail-safes and redundancies into your design to maintain safety and total system reliability. Because this product was not intended for use in applications requiring extremely high reliability/safety, such as aerospace equipment, main communication equipment, nuclear power control equipment, or medical equipment related to direct medical care, etc., please make your own judgment on this product's suitability after a full evaluation.

About this Manual

Aim of the Manual

This manual was created to provide information on development, design, and installation of POS systems and development and design of printer applications for developers.

Manual Content

The manual is made up of the following sections:

Chapter 1	Product Overview
Chapter 2	Setup
Chapter 3	Application Development Information
Chapter 4	Handling
Chapter 5	Replacement of the TM-T20
Appendix	Specifications of Interface and Connector Character Code Tables

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Product Overview

This chapter describes features and general specifications of the product.

Features

Printing

- High speed receipt printing is possible (200 mm/s maximum).
- Shifting from 80 mm width paper printing to 58 mm width paper printing is available.
- Paper-saving function is supported.

Handling

- Easy drop-in paper loading

Software

- Command protocol is based on the ESC/POS® Proprietary Command System.
- Windows printer drivers, OPOS ADK, OPOS for .NET ADK, JavaPOS ADK and other drivers (Linux CUPS, Mac driver) are available.
- Printing of various types of bar codes, GS1-DataBar, and two-dimensional symbols (PDF417, QR code, MaxiCode, Composite Symbology) is supported.
- A maintenance counter function is supported.
- 42-column mode is supported.

Others

- Various installation layouts (horizontal, vertical, and wall-hanging installation) are selectable.
- Optional external buzzer is available.

Product Configurations

Interface

- Serial + USB interface model
- Ethernet + USB interface model
- Ethernet interface model

Colors

EDG (Epson Dark Gray)

Accessories

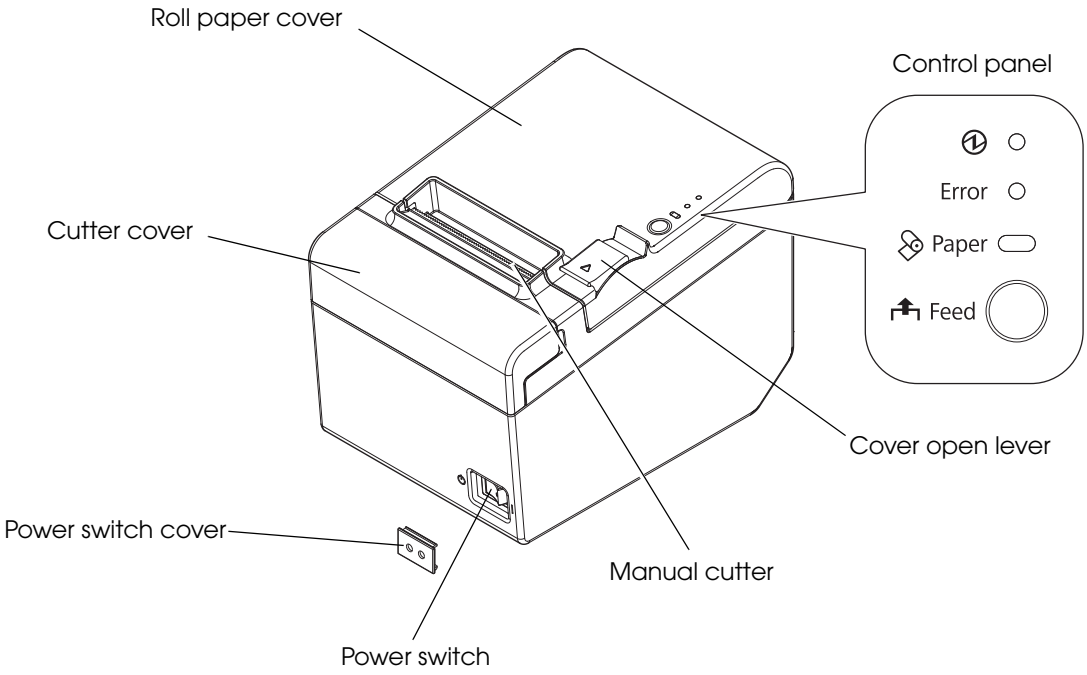
Included

- Roll paper (for operation check)
- Power switch cover
- Power switch waterproof cover
- Wall hanging bracket
- Screws for wall hanging bracket
- Rubber feet for vertical installation
- Control panel label for vertical installation
- 58-mm width paper guide plate
- Interface cable (only for serial + USB model)
- AC adapter
- AC cable
- TM-T20II Software & Documents Disc containing drivers, utilities, and documentation
- Setup Guide
- Warranty certificate

Options

- Affixing tape for fixing the printer (Model: DF-10)
- External buzzer unit (Model: OT-BZ20)

Part Names and Functions



Power Switch

Turns the printer on or off. The marks on the switch: (⏻ : OFF/ | : ON)

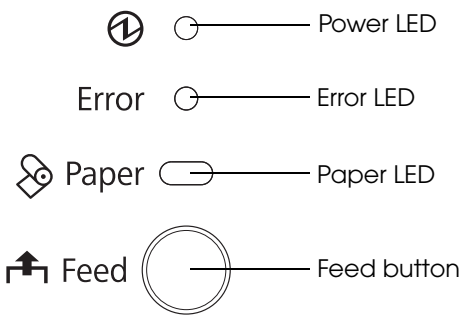
CAUTION To turn the printer on immediately after turning the printer off, wait until the LED lights go off, and then turn the power on.

NOTE Before turning the printer off, it is recommended to send a power-off command to the printer. If you use the power-off sequence, the latest maintenance counter values are saved. (Maintenance counter values are usually saved every two minutes.)
For information about ESC/POS commands, see the ESC/POS Quick Reference or the ESC/POS Command Reference.

Roll paper cover/Cover open lever

- Use the cover open lever and open the roll paper cover to install or replace the roll paper.
- Do not open the roll paper cover while printing is in progress or the auto-cutter is in operation.

Control Panel



> **NOTE** When installing the printer vertically or hanging the printer on a wall, be sure to attach the included control panel label for vertical installation on the roll paper cover. The control panel label for vertical installation is upside down.

Power LED (green)

Lights when the power supply is on.

Error LED (orange)

- Lights after the power is turned on or after a reset (offline). Automatically goes out after a while to indicate that the printer is ready.
- Lights when printing has stopped (offline) due to paper end.
- Lights when the roll paper cover is open (offline).
- Flashes when an error occurs. (For information about the flashing patterns, see "Error Status" on page 17.)

Paper LED (orange)

- Lights when the roll paper is out.
- Flashes when Self-test standby state.
- Flashes when macro execution standby state.

Feed button

Pressing this button once feeds the roll paper by one line. Holding this button down feeds the roll paper continuously.

> **NOTE** Enabling/disabling of Feed button can be selected by a command. If the command is set to disable this button, it does not function. For information about ESC/POS commands, see the ESC/POS Quick Reference or the ESC/POS Command Reference.

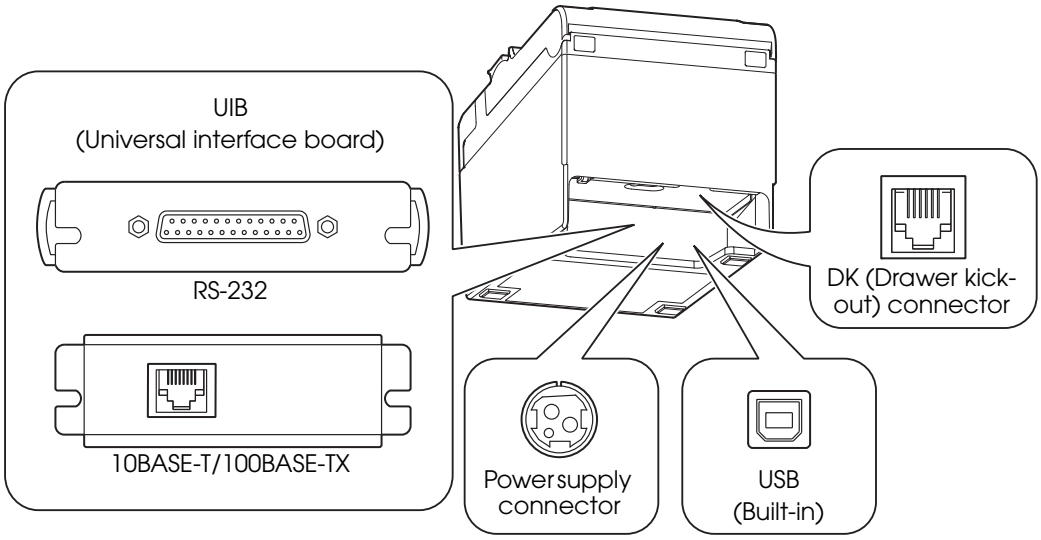
Offline

The printer automatically goes offline under the following conditions:

- During power on until the printer is ready
- During the self-test
- While roll paper is fed using the Feed button
- When the roll paper cover is open
- When the printer stops printing due to a paper end
- During a macro execution standby state
- When an error has occurred (See "Error Status" on page 17.)

Connectors

All cables are connected to the connector panel on the lower rear of the printer.



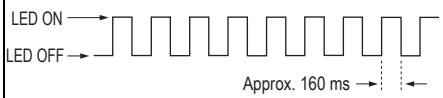
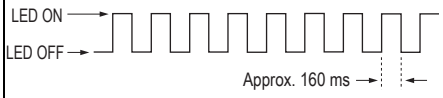
- DK (Drawer kick-out) connector:
  Connects the cash drawer or the optional external buzzer.
  See "Connecting the Cash Drawer" on page 58, and "Connecting the Optional External Buzzer" on page 55.
- Interface connector:
  Connects the printer with the host computer interface.
  See "Connecting the Printer to the Host Computer" on page 38.
- Power supply connector:
  Connect the AC adapter.
  See "Connecting to the Power Source" on page 44.

Error Status

When an error occurs, the printer stops operating, goes offline, and flashes the Error LED. There are three possible error types: automatically recoverable errors, recoverable errors, and unrecoverable errors.

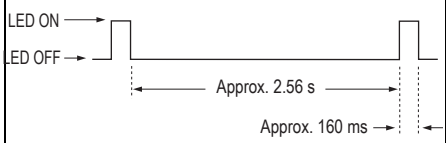
Automatically Recoverable Errors

They can be recovered easily, as described below.

Error	Error description	Error LED flashing pattern	Recovery measure
Roll paper cover open error	The roll paper cover was opened during printing.		Recovers automatically when the roll paper cover is closed.
Print head temperature error	A high temperature outside the head drive operating range was detected.		Recovers automatically when the print head cools.

Recoverable Errors

They can be recovered easily by turning the power on again or sending an error recovery command from the driver after eliminating the cause of the error.

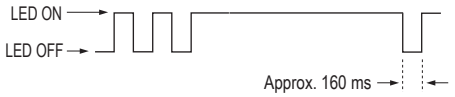
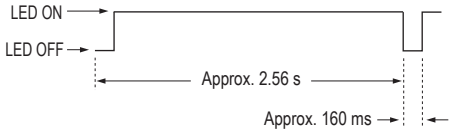
Error	Error description	Error LED flashing pattern	Recovery measure
Autocutter error	Autocutter does not work correctly.		Remove the jammed paper or foreign matter in the printer, close the roll paper cover, send the error recovery command, or turn the power on again.

Unrecoverable Errors

If the same error occurs again even after turning the power back on, contact your dealer or a Epson service center.

CAUTION

Turn off the power immediately when an unrecoverable error occurs.

Error	Error description	Error LED flashing pattern
Memory R/W error	After R/W checking, the printer does not work correctly.	
High voltage error	The power supply voltage is extremely high.	
Low voltage error	The power supply voltage is extremely low.	
CPU execution error	The CPU is executing an incorrect address.	
Internal circuit connection error	Internal circuits are not connected correctly.	

NV Memory (Non-Volatile Memory)

The printer's NV memory stores data even after the printer power is turned off. NV memory contains the following memory areas for the user:

- NV graphics memory
- User NV memory
- Memory switches
- R/E (Receipt Enhancement)
- User-defined page
- Maintenance counter

> **CAUTION** As a guide, NV memory rewriting should be used 10 times or less a day when you program applications.

NV Graphics Memory

Graphics, such as shop logos to be printed on receipts, can be registered. Even with a serial interface model whose communication speed is low, high speed graphic printing is possible.

Use the TM-T20II Utility to register graphics. You can also use the TM-T20II Utility or the NV graphics information print mode to print and confirm the registered graphics.

> **NOTE**
> - For information about the TM-T20II Utility, see the TM-T20II Utility User's Manual.
> - For information about how to use the NV graphics information print mode, see "NV Graphics Information Print Mode" on page 74.

User NV Memory

You can store and read text data for multiple purposes, such as for storing a note including customizing or maintenance information of the printer.

Use ESC/POS commands to store and read the text data.

> **NOTE** For information about ESC/POS commands, see the ESC/POS Quick Reference or the ESC/POS Command Reference.

Memory Switches

With the memory switches, which are software switches for the printer, you can configure various settings of the printer. For information about the memory switch, see "Setting the Memory Switches/Receipt Enhancement" on page 46.

R/E (Receipt Enhancement)

Graphics, such as shop logos can be printed on top or bottom of receipts by setting R/E (Receipt Enhancement). For information about R/E, see "Setting the Memory Switches/Receipt Enhancement" on page 46.

User-defined Page

You can store character data in the user-defined page (character code table: page 255) so that you can also print characters not resident in the printer.

> NOTE
>
> For the character code table, see "Character Code Tables" on page 96.

Maintenance Counter

With this function, printer information, such as the number of lines printed, the number of autocuts, and printer operation time after the printer starts working, is automatically stored in NV memory. You can read the information with the Status API of the APD, OPOS ADK, or ESC/POS commands to use it for periodical checks or part replacement.

> NOTE
>
> You can also check the head running length and number of times of autocutting with the self-test (see "Self-test Mode" on page 72.) and the TM-T20II Utility.

Product Specifications

Printing method		Thermal line printing
Printing direction		Unidirectional with friction feed
Paper feed speed		200 mm/s {7.87"/s} (continuous paper feeding with the Feed button)
Cutting method		Partial cut (cutting with one point in left edge left uncut)
Interface	Serial + USB interface models	Serial (RS-232), USB (USB 2.0, Full-speed (12 Mbps))
	Ethernet + USB interface models	Ethernet (10BASE-T/100BASE-TX), USB (USB 2.0, Full-speed (12 Mbps))
	Ethernet interface models	Ethernet (10BASE-T/100BASE-TX)
Buffers	Receive buffer	4 KB/45 bytes (selectable using the memory switch)
	Downloaded buffer (user-defined characters and user-defined images)	12 KB
	Macro buffer	2 KB
	NV graphics memory	256 KB
	Download graphics memory	208 KB
	User NV memory	1KB
Barcode/ two-dimensional symbol printing		UPC-A, UPC-E, JAN 8 (EAN 8), JAN 13 (EAN 13), CODE 39, ITF, CODABAR (NW-7), CODE 93, CODE 128, GS1-128, GS1 DataBar Omnidirectional, GS1 DataBar Truncated,GS1 DataBar Stacked, GS1 DataBar Stacked Omnidirectional,GS1 DataBar Limited, GS1 DataBar Expanded,GS1 DataBar Expanded Stacked, PDF417, QR CODE, MaxiCode, Composite Symbology
Operating voltage		DC 24V ± 7%
Life	Printer mechanism	15,000,000 lines (printing + paper feeding)
	Thermal head	100 million pulses,100 km
	Autocutter	1,500,000 cuts
	MTBF	360,000 hours
	MCBF	60,000,000 lines
Overall dimensions (H × W × D)		146 × 140 × 199 mm {5.75 × 5.51 × 7.83"}
Weight (mass)		Approx. 1.7 kg {3.74 lb}

Printing Specifications

			80 mm width paper printing	58 mm width paper printing
Printing method			Thermal line printing	
Dot density			203 × 203 dpi	
Paper width	Standard mode (initial setting)		72.0 mm {2.83"}, 576 dots	52.5 mm {2.07"}, 420 dots
	42 column mode		68.3 mm {2.69"}, 546 dots	47.3 mm {1.86"}, 378 dots
Character spacing	Standard mode (initial setting)	Font A	0.25 mm {0.0098"} (2 dots)	
		Font B	0.25 mm {0.0098"} (2 dots)	
	42 column mode	Font A	0.38 mm {0.015"} (3 dots)	0.25 mm {0.0098"} (2 dots)
		Font B	0.25 mm {0.0098"} (2 dots)	0.25 mm {0.0098"} (2 dots)
Line spacing			3.75 mm {1/5"} (initial setting, programmable by command)	
Maximum print speed*			200 mm/s {7.87"/s}	

dpi: dots per inch

*: when the printer prints with the standard print density level at 25°C {77°F} and 24V.

CAUTION

- To change the paper width, you need to install the 58-mm width paper guide plate and to make the paper width setting with the memory switch. For information about how to change the paper width, see "Changing the Paper Width" on page 37.
- The printing speed changes automatically depending on the applied voltage and head temperature.
- The maximum printing speed may not be achieved depending on the type of interface, the setting of data transmission speed, and the combination of control commands.
- If the data transmission speed is slower than the maximum printing speed, the printing speed may fluctuate and the print result may become shaded and/or dot displacement in paper feeding may occur.Furthermore, if the data transmission speed is much slower than the maximum printing speed, intermittent printing will occur.

NOTE

Especially when using a serial interface, low transmission speed may cause intermittent printing. It is recommended to transmit data to the printer as quickly as possible.

Character Specifications

Number of characters

- Alphanumeric characters: 95
- Extended graphics: 128 × 43 pages (including user-defined page)
- International characters: 18 sets

Character structure

		80 mm width paper printing	58 mm width paper printing
Standard mode (initial setting)	Font A	12 × 24 (including 2-dot horizontal spacing)	
	Font B	9 × 17 (including 2-dot horizontal spacing)	
42 column mode	Font A*	13 × 24 (including 3-dot horizontal spacing)	9 × 17 (including 2-dot horizontal spacing)
	Font B	9 × 17 (including 2-dot horizontal spacing)	12 × 24 (including 2-dot horizontal spacing)

*: 13 × 24 font is a font with a 1-dot horizontal space added to Font A of the standard mode. Therefore, the character size is the same as Font A of the standard mode and the space between characters increases by 1 dot. When printing graphics characters, there is 1-dot space between characters.

Character size

		Standard/Double-height/Double-width/Double-width, double-height W × H	
		80 mm width paper printing	**58 mm width paper printing**
Standard mode	Font A	1.25 × 3.00 mm/1.25 × 6.00 mm/2.50 × 3.00 mm/2.50 × 6.00 mm {0.05 × 0.12"/0.05 × 0.24"/0.10 × 0.12"/0.10 × 0.24"}	
	Font B	0.88 × 2.13 mm/0.88 × 4.26 mm/1.76 × 2.13 mm/1.76 × 4.26 mm {0.03 × 0.08"/0.03 × 0.17"/0.07 × 0.08"/0.07 × 0.17"}	
42 column mode	Font A	1.25 × 3.00 mm/1.25 × 6.00 mm/ 2.50 × 3.00 mm/2.50 × 6.00 mm {0.05 × 0.12"/0.05 × 0.24"/ 0.10 × 0.12"/0.10 × 0.24"}	0.88 × 2.13 mm/0.88 × 4.26 mm/ 1.76 × 2.13 mm/1.76 × 4.26 mm {0.03 × 0.08"/0.03 × 0.17"/ 0.07 × 0.08"/0.07 × 0.17"}
	Font B	0.88 × 2.13 mm/0.88 × 4.26 mm/ 1.76 × 2.13 mm/1.76 × 4.26 mm {0.03 × 0.08"/0.03 × 0.17"/ 0.07 × 0.08"/0.07 × 0.17"}	1.25 × 3.00 mm/1.25 × 6.00 mm/ 2.50 × 3.00 mm/2.50 × 6.00 mm {0.05 × 0.12"/0.05 × 0.24"/ 0.10 × 0.12"/0.10 × 0.24"}

Note:

Space between characters is not included.

Characters can be scaled up to 64 times as large as the standard sizes.

Characters per line

		Standard/Double-height/Double-width/Double-width, double-height	
		80 mm width paper printing	**58 mm width paper printing**
Standard mode	Font A	48/48/24/24	35/35/17/17
	Font B	64/64/32/32	46/46/23/23
42 column mode	Font A	42/42/21/21	42/42/21/21
	Font B	60/60/30/30	31/31/15/15

Paper Specifications

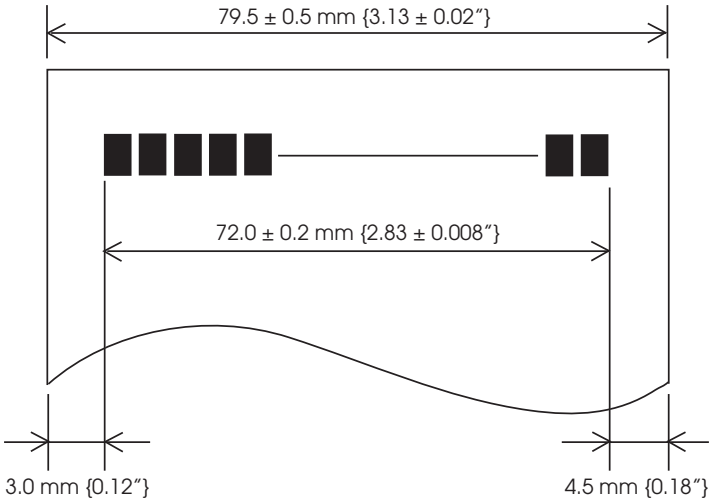
		80 mm width paper printing	58 mm width paper printing
Paper types		Specified thermal paper	
Form		Roll paper	
Size	Roll paper diameter	83 mm {3.27"} maximum	
	Roll paper core	Inside: 12 mm {0.47"}, Outside: 18 mm {0.71"}	
	Roll width when taken up	80 + 0.5/-1.0 mm {3.15 + 0.02/-0.04"}	58 + 0.5/-1.0 mm {2.28 + 0.02/-0.04"}
	Paper width	79.5 ± 0.5 mm {3.13 ± 0.02"}	57.5 ± 0.5 mm {2.26 ± 0.02"}
Specified roll paper type		NTP080-80	NTP058-80
Specified original paper type		TF50KS-E, TF60KS-E (NIPPON Paper Industries Co., Ltd.) PD150R, PD160R, PD190R (OJI Paper Mfg. Co., Ltd.) P220AGB-1 (Mitsubishi Paper Mills Limited.) P350 (Kanzaki Specialty Papers) AF50KS-E (Jujo Thermal Oy) F5041 (Mitsubishi HiTec Paper Flensburg GmbH) KT55F20, KT48F20 (Koehler Paper Group)	

CAUTION Paper must not be pasted to the roll paper core.

Printable Area

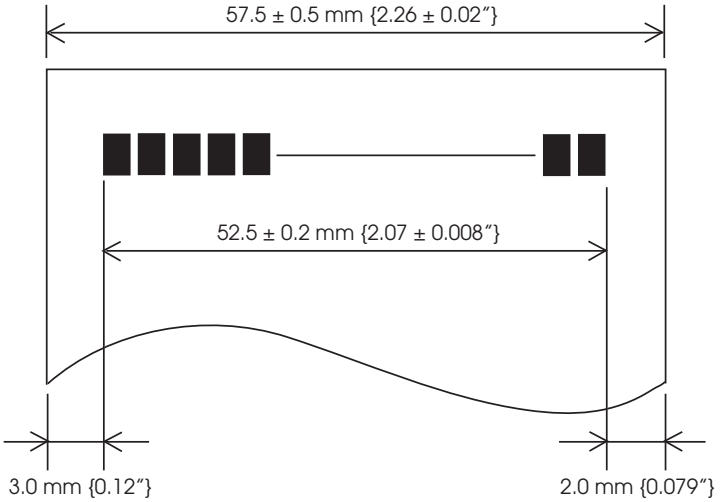
80 mm paper width printing

The maximum printable area of paper with a width of 79.5 ± 0.5 mm is 72.0 ± 0.2 mm (576 dots) and the approximate space is 3.0 mm on the left side on the left side and 4.5 mm on the right side.

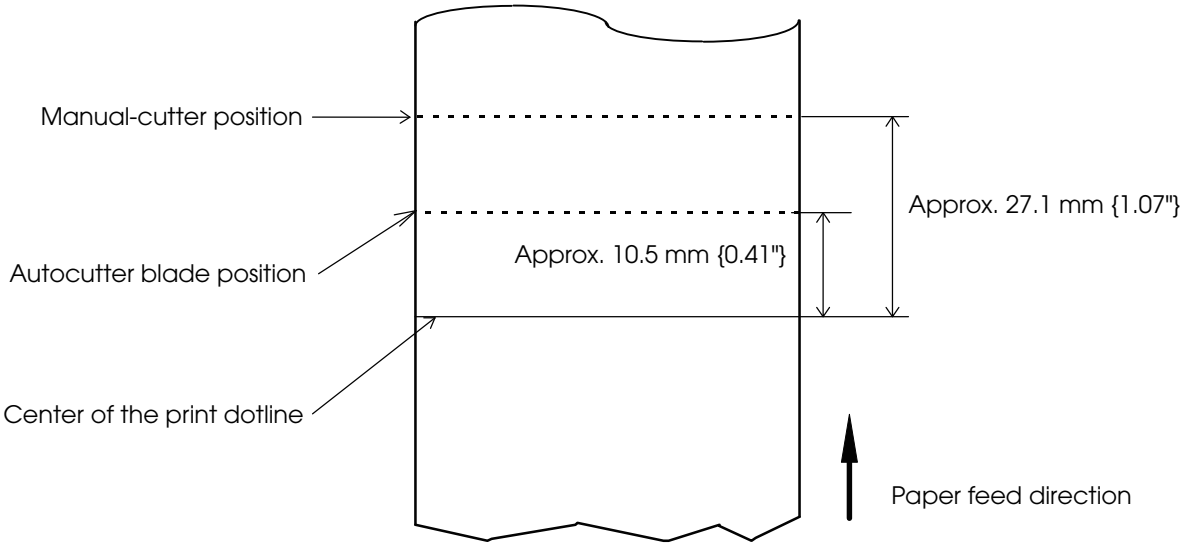


58 mm paper width printing

The maximum printable area of paper with a width of 57.5 ± 0.5 mm is 52.5 ± 0.2 mm (420 dots), and the approximate space is 3.0 mm on the left side and 2.0 mm on the right side.

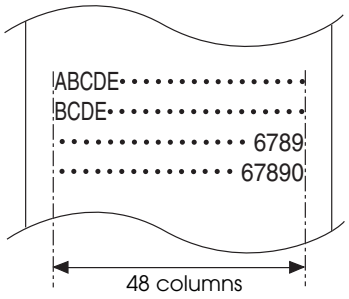


Printing and Cutting Positions



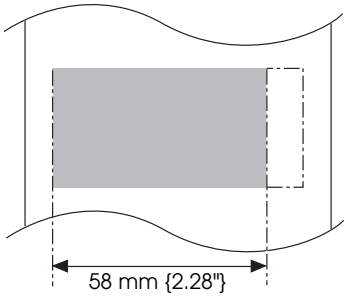
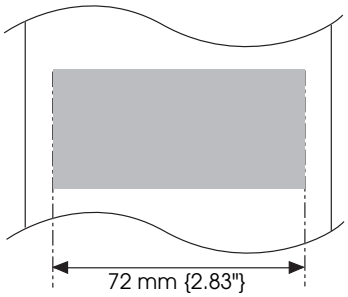
CAUTION The values above may vary slightly as a result of paper slack or variations in the paper. Take this into account when setting the cutting position of the autocutter.

Electrical Characteristics

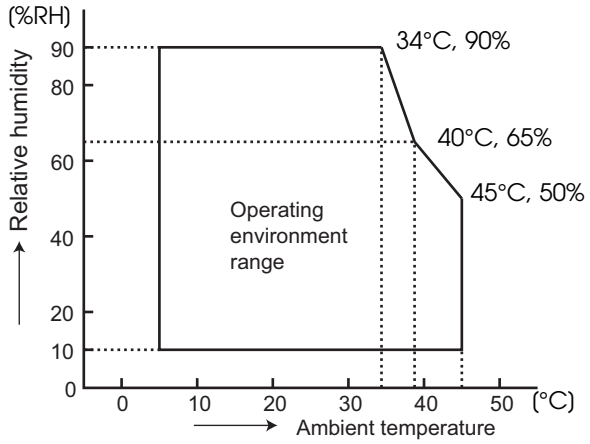
Operating voltage		DC 24V ± 7%
Current consumption (24V, 25°C, standard print density)	Standby	Mean: Approximately 0.1 A
	Operating	Mean: Approximately 1.8 A Note: When print ratio is approximately 18% • Continuous printing for 50 lines (repeating 20H-7FH) ∗ Font A, 48 columns, ASCII character • 5 line feeding • Autocutting 

CAUTION

If printing is continuously performed with a high ratio, the overcurrent protection may be activated and result in uneven print density or a low voltage error. Therefore, the printing length must not exceed the following values when printing with high print ratio.
Print ratio: Number of dots being energized per one dot line/Total number of dots per one dot line (576 dots)

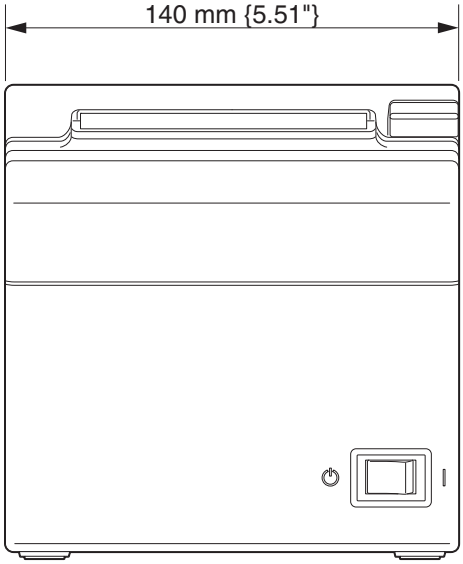
Print ratio	80%	100%
Print example		
Print length	30 mm {1.18"}	20 mm {0.79"}

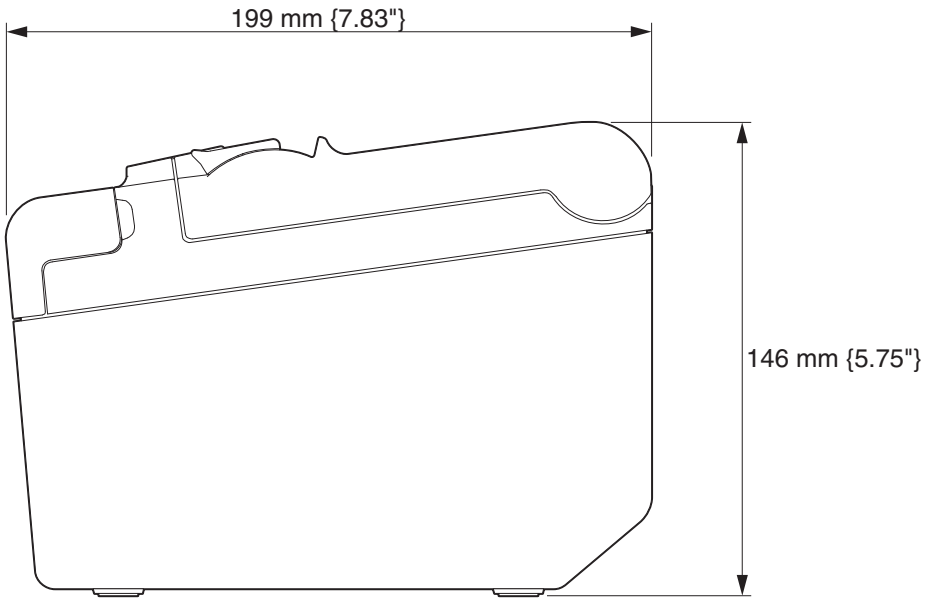
Environmental Conditions

Temperature/ Humidity	Operating	5 to 45°C {41 to 113°F}, 10 to 90% RH (See the operating temperature and humidity range below.)
	Storage	-10 to 50°C {14 to 122°F}, 10 to 90% RH (except for paper)
		
Acoustic noise (operating)		Approximately 55 dB (bystander position) Note: The values above are measured in the Epson evaluation condition. Acoustic noise differs depending on the paper used, printing contents, and the setting values, such as print speed or print density.

External Dimensions and Mass

- Height: Approximately 146 mm {5.75"}
- Width: Approximately 140 mm {5.51"}
- Depth: Approximately 199 mm {7.83"}
- Mass: Approximately 1.7 kg {3.74 lb} (except for roll paper)



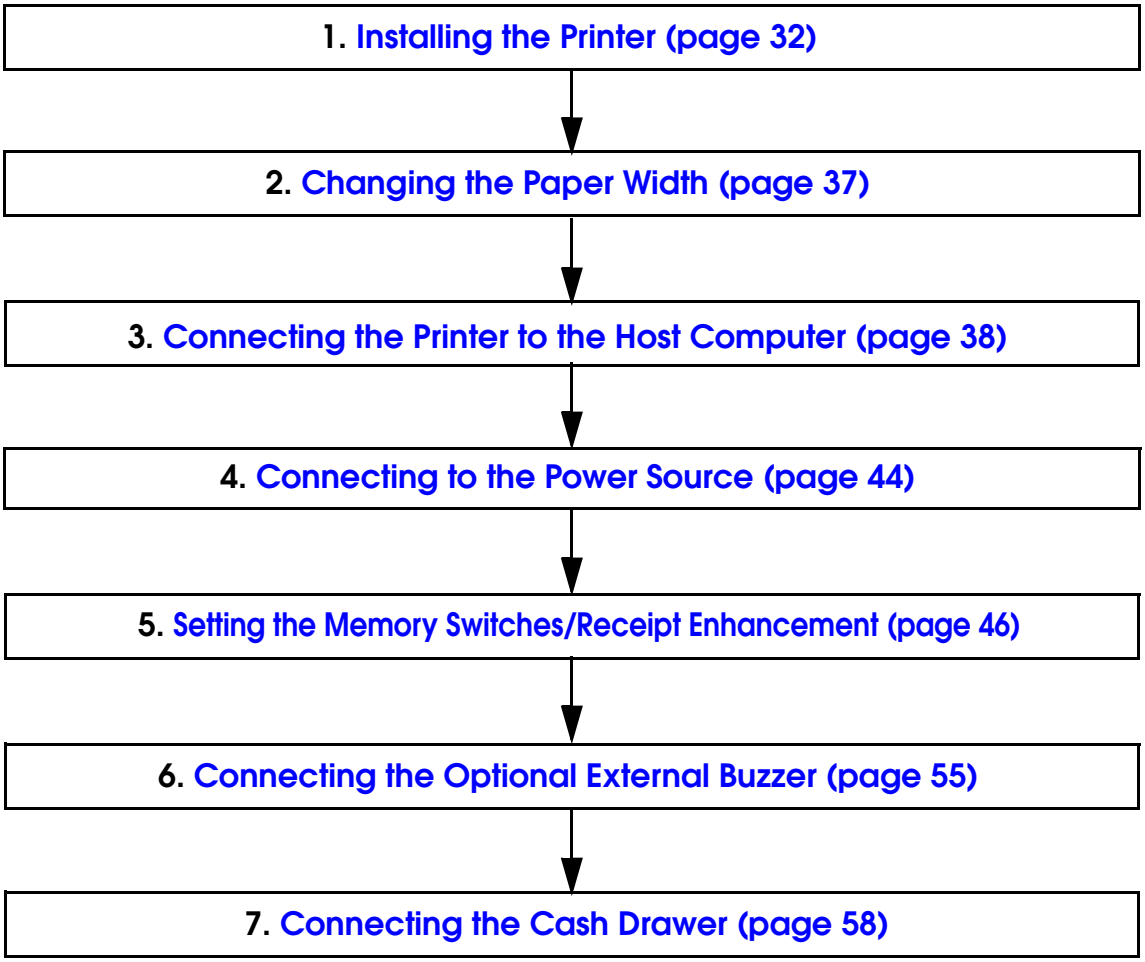


Setup

This chapter describes setup and installation of the product and peripherals.

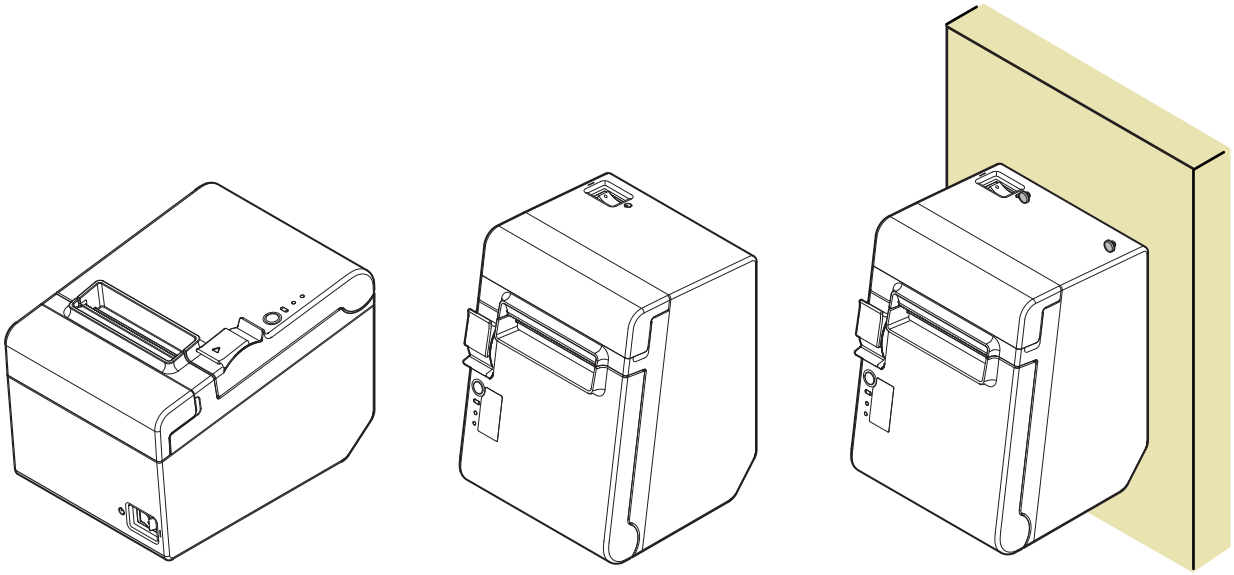
Flow of Setup

This chapter consists of the following sections along with the setup flow of the product and peripherals.


1. Installing the Printer (page 32)
2. Changing the Paper Width (page 37)
3. Connecting the Printer to the Host Computer (page 38)
4. Connecting to the Power Source (page 44)
5. Setting the Memory Switches/Receipt Enhancement (page 46)
6. Connecting the Optional External Buzzer (page 55)
7. Connecting the Cash Drawer (page 58)

Installing the Printer

You can install the printer horizontally on a flat surface (with the paper exit on top) or vertically (with the paper exit at the front). Also, you can hang it on a wall using the included accessories.



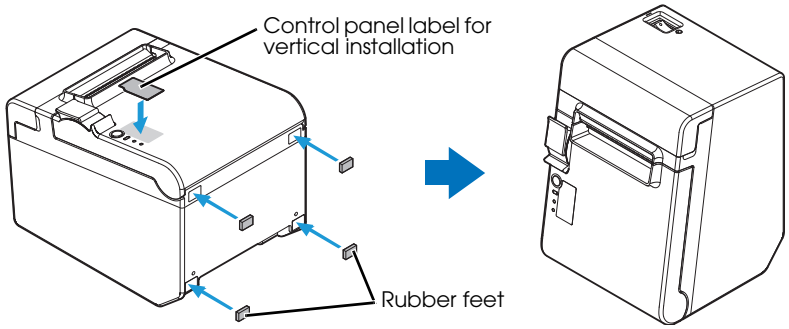
Horizontal installation　　Vertical installation　　Hanging on a wall

CAUTION

- Take measures to prevent the printer from moving by vibration during paper cutting and when using a drawer. Affixing tape (Model: DF-10) is provided as an option.
- Do not place the printer in dusty locations.
- Do not knock or strike the printer. This may cause defective print.
- Do not catch cables or foreign matter under the printer.

Installing the Printer Vertically

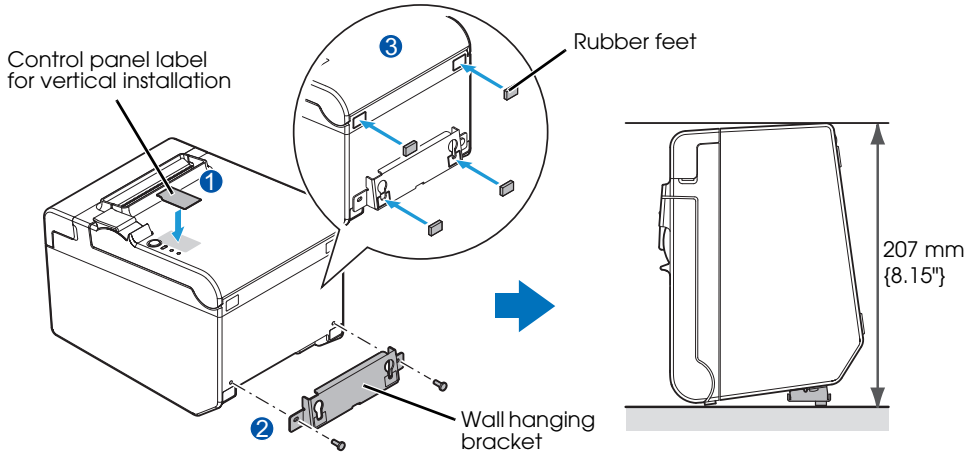
When installing the printer vertically, be sure to attach the included control panel label for vertical installation on the roll paper cover, and attach 4 rubber feet in the rectangular indents in the printer case, as shown in the illustration below.



Vertical installation

You can install the printer so that the roll paper cover is upright to the mounting surface using the included wall hanging bracket.

1. Attach the control panel label for vertical installation on the roll paper cover.
2. Install the wall hanging bracket on the printer, and fix it using 2 included screws.
3. Attach 2 rubber feet in the rectangular indents in the printer case, and attach 2 rubber feet within the scribed line on the hanging bracket.
4. Place the printer with the wall-hanging-bracket-side down.



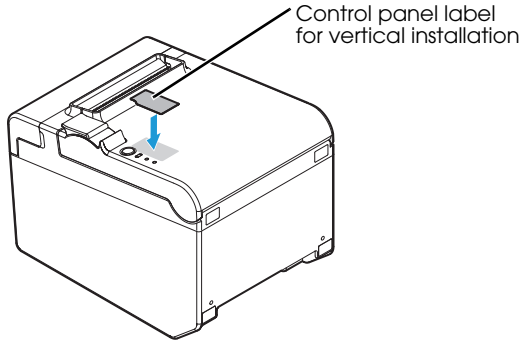
Hanging the Printer on a Wall

To hang the printer on the wall, follow the steps below.

CAUTION

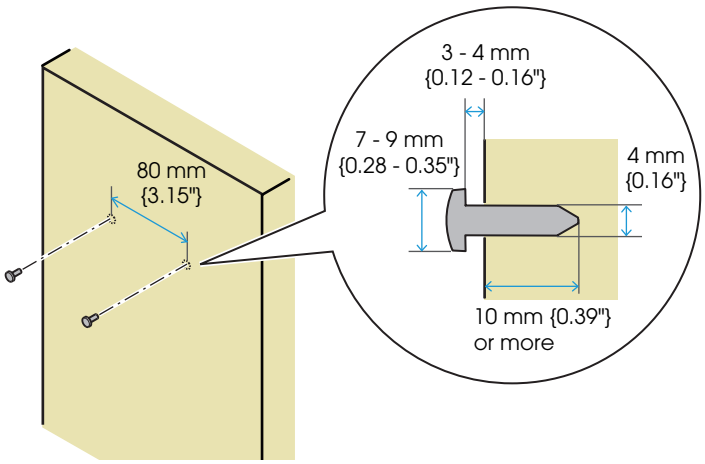
- To fix the printer securely, hang the printer on a wall made of wood, concrete, or metal. The thickness of the wall should be 10 mm or more.
- Be sure to use metallic screws.
- The screws on the wall side must have a pull-out strength of 150 N (15.3 kgf) or more.

1 Attach the included control panel label for vertical installation on the roll paper cover.

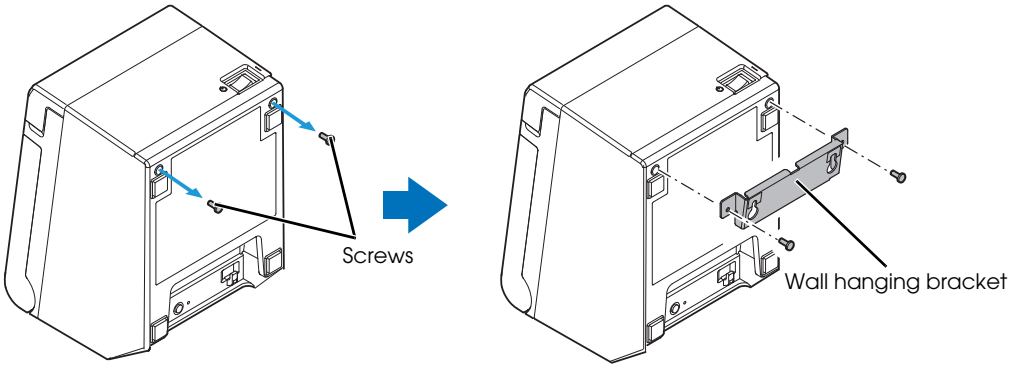


2 Install 2 screws (screw diameter: 4 mm, head diameter: 7 to 9 mm) in the wall at an interval of 80 mm.

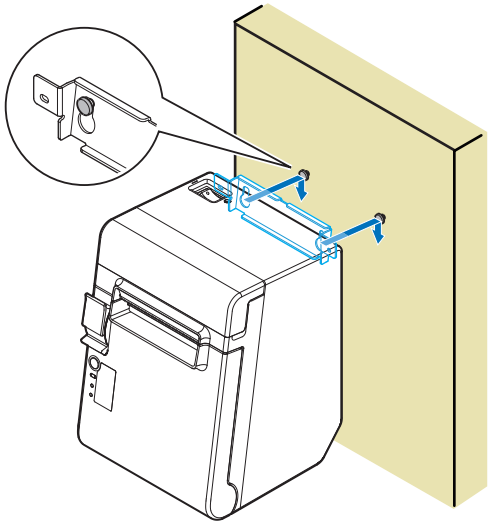
Make sure the length of the screw's body in the wall is 10 mm or more, and the length outside the wall is 3 to 4 mm.



3 Remove the screws retaining the printer case, install the wall hanging bracket on the printer, and fix it using the screws.



4 Align the holes in the wall hanging bracket with the screws on the wall, and hook it securely.



Attaching Cover on the Power Switch

Install the power switch cover that comes with the TM-T20II onto the printer to prevent inadvertent operation of the power switch and to prevent tampering. To reset the printer when the power switch cover is installed, insert a long, thin object (such as the end of a paper clip) into the hole in the power switch cover and press the power switch.

A waterproof cover for the power switch can also be attached.

WARNING

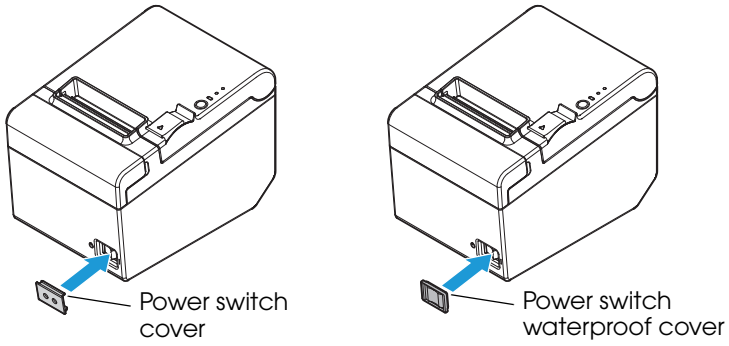
If an accident occurs with the power switch cover attached, unplug the AC cable immediately.

Continued use of the printer may cause fire or shock.

CAUTION

Use the power switch waterproof cover if the printer is installed in a humid location or exposed to water. If current leakage occurs, it could result in electric shock.

To use these covers, install them as shown in the illustration below.



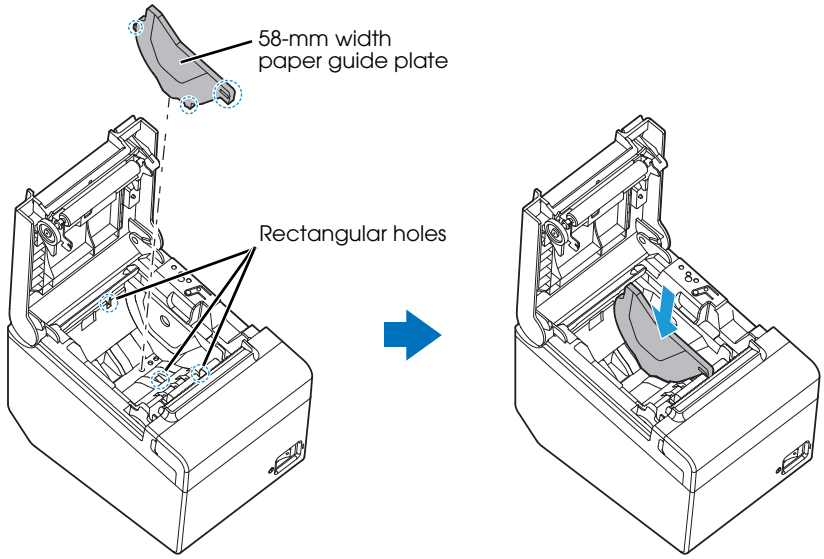
Changing the Paper Width

You can change the paper width from 80 to 58 mm by installing the included 58-mm width paper guide plate. Follow the steps below to change the paper width.

> **CAUTION** Because some parts of the print head and the autocutter contact the platen and they may become worn out, once you change the paper width from 80 to 58 mm and use the printer, you cannot change it back to 80 mm.

1 Open the roll paper cover.

2 Align 3 projections on the 58-mm width paper guide plate with the rectangular holes in the printer, and push it downwards.



3 Make the setting for the paper width with the memory switch.

For information about the memory switch, see "Setting the Memory Switches/Receipt Enhancement" on page 46.

Connecting the Printer to the Host Computer

CAUTION

- The printer uses a modular connector specifically designed for the cash drawer. Do not connect the connector to a telephone line.
- For USB interface models, do not turn on the printer before installing the printer driver.
- For Ethernet interface models, do not connect a telephone line or DK cable to the Ethernet connector.

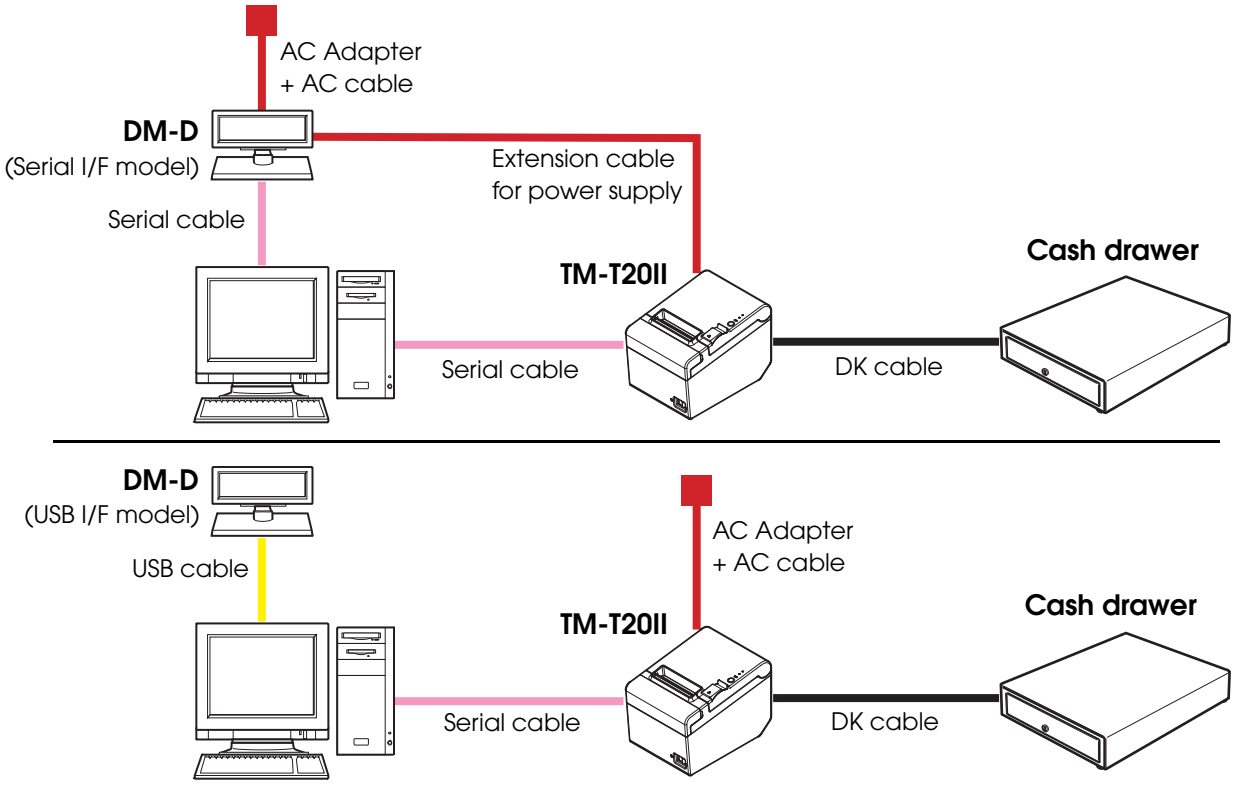
For Serial Interface

Serial interface connection diagram

When this printer is connected to a host computer by the serial interface, there are two connection methods; stand alone connection and pass-through connection.

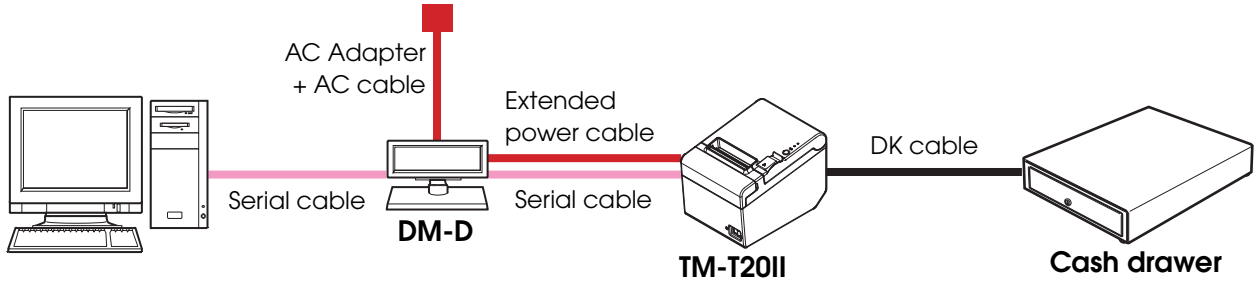
Stand alone connection

This printer is connected to the host computer directly via the serial port. When a customer display (DM-D) is to be connected, connect it to the host computer via the serial port or USB port.



Pass-through connection

This printer is connected to the host computer through the serial interface via the customer display (DM-D).



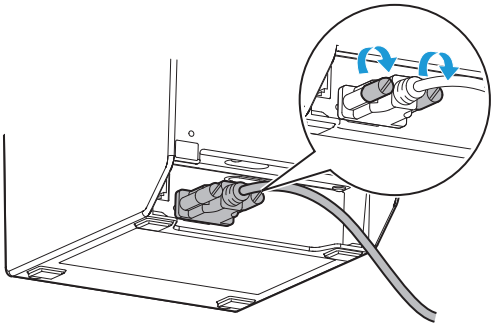
Connecting the serial interface (RS-232) cable

WARNING

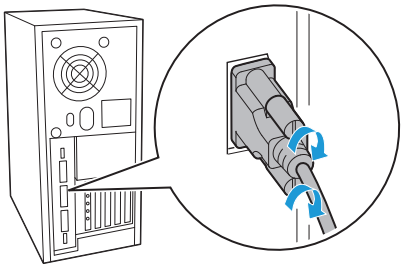
Be sure to turn off the power supply for both the printer and host computer before connecting the cables.

1 Insert the serial cable connector firmly into the serial interface connector.

2 When using connectors equipped with screws, tighten them to secure the connectors firmly.

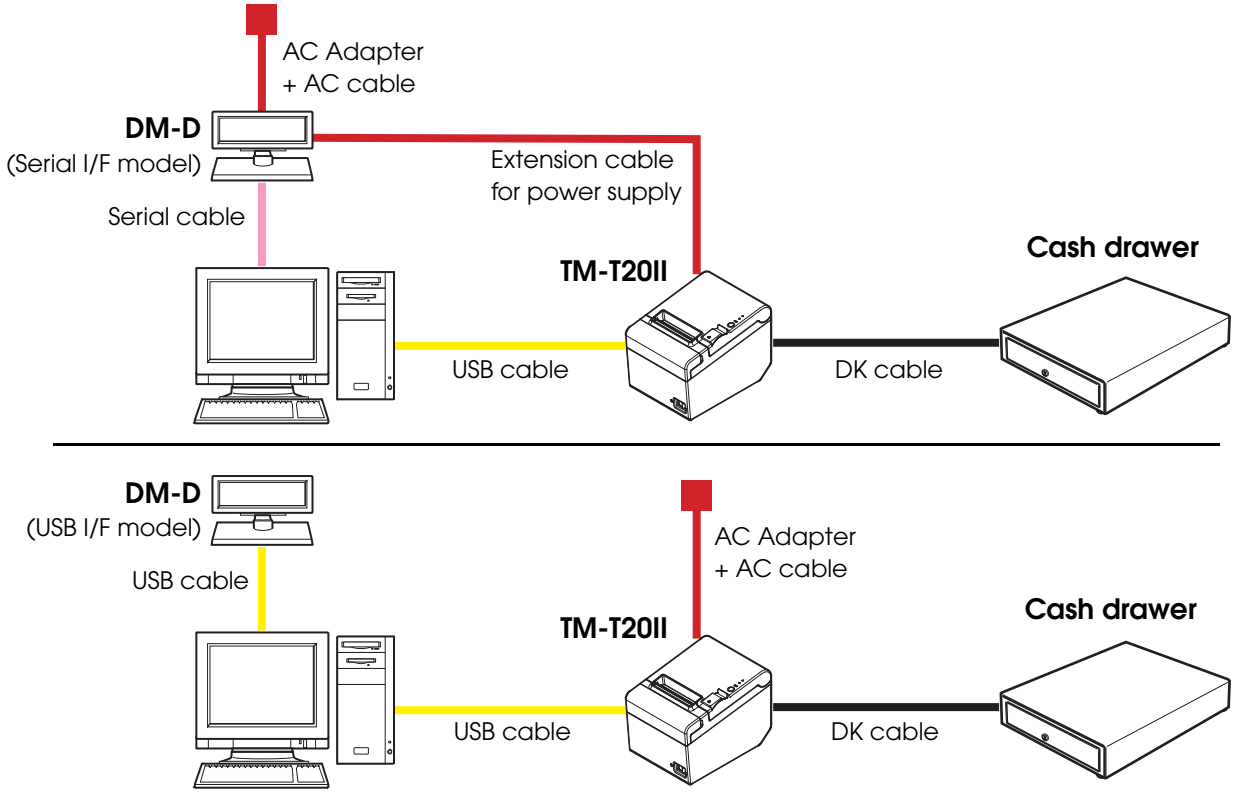


3 Connect the other end of the serial cable to the host computer.



USB interface connection diagram

This printer is connected to the host computer via the USB port. When a customer display (DM-D) is to be connected, connect it to the host computer via the serial port or USB port.

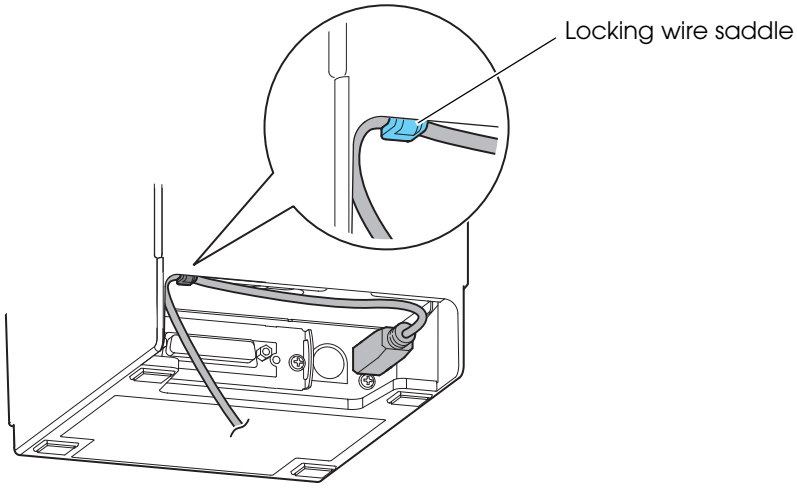


Connecting the USB interface cable

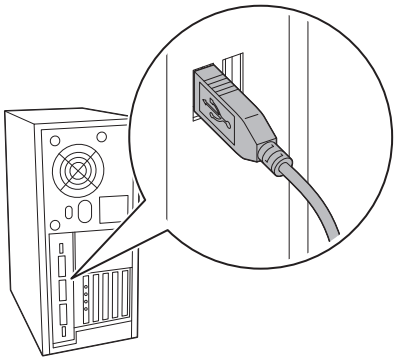
1 Insert the USB cable into the USB interface connector of the printer.

2 Put the USB cable through the locking wire saddle.

> **CAUTION** Putting the USB cable through the locking wire saddle, as shown in the figure below, prevents the cable from coming unplugged.



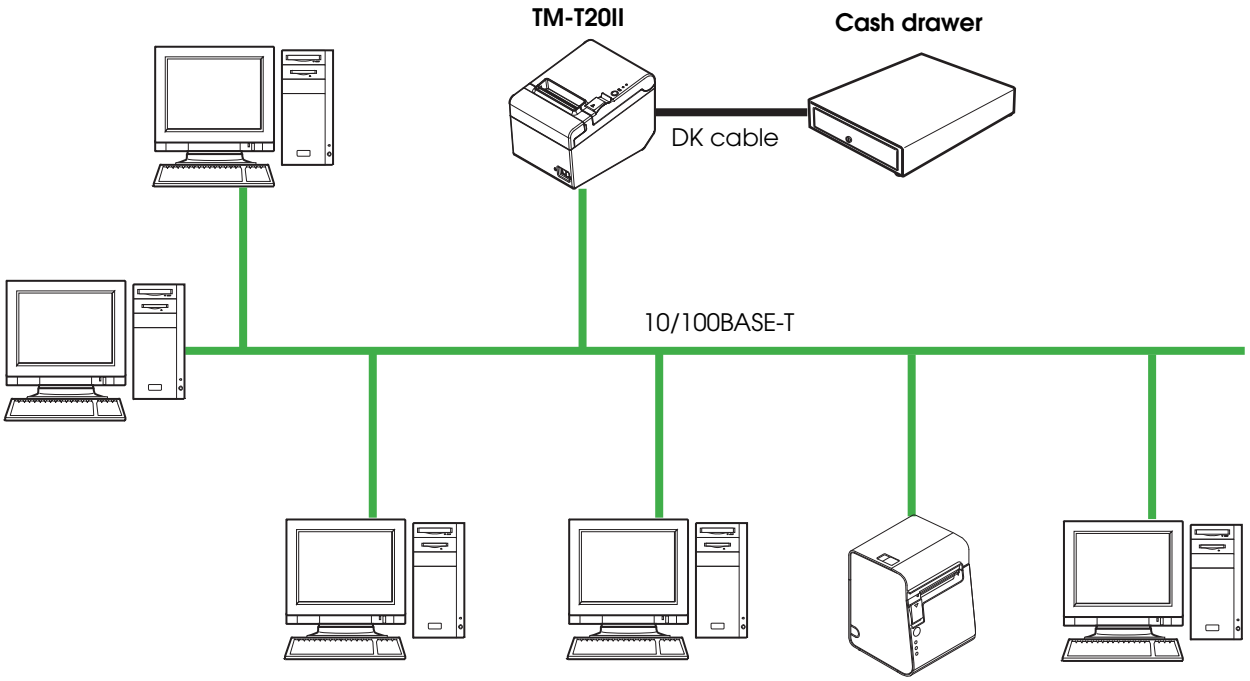
3 Connect the other end of the USB cable to the host computer.



For Ethernet Interface

Connect the printer to a network by a LAN cable via a hub.

Ethernet interface connection diagram



Connecting the LAN cable

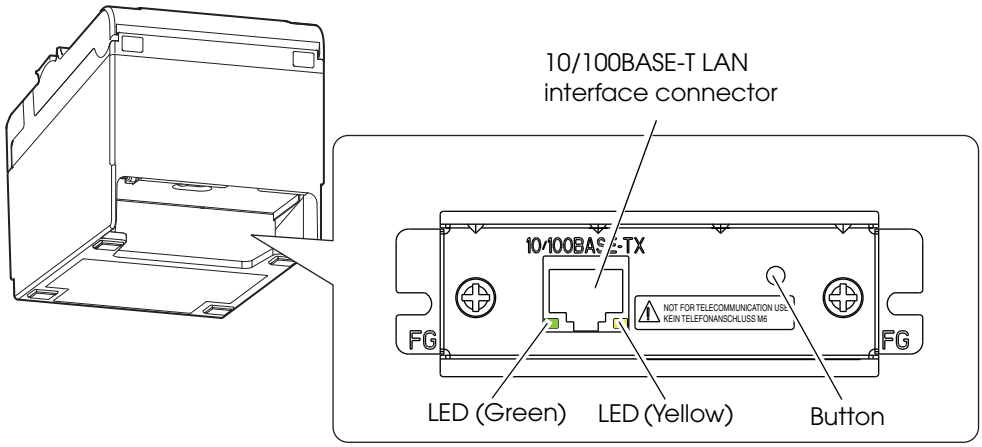
CAUTION

- **When LAN cables are installed outdoors, make sure devices without proper surge protection are cushioned by being connected through devices that do have surge protection.**
  Otherwise, the devices can be damaged by lightning.
- **Never attempt to connect the customer display cable, DK cable, or a telephone line cable to the 10/100BASE-T LAN connector.**

NOTE

To use the Ethernet interface, EpsonNet Config is required. For detailed information about the setup methods, see the EpsonNet Config Operations Guide.

Connect the LAN cable to the 10/100BASE-T LAN connector by pressing firmly until the connector clicks into place.



A push button is provided to perform the following functions.
- Status sheet printing
- Setting initialization

Connecting to the Power Source

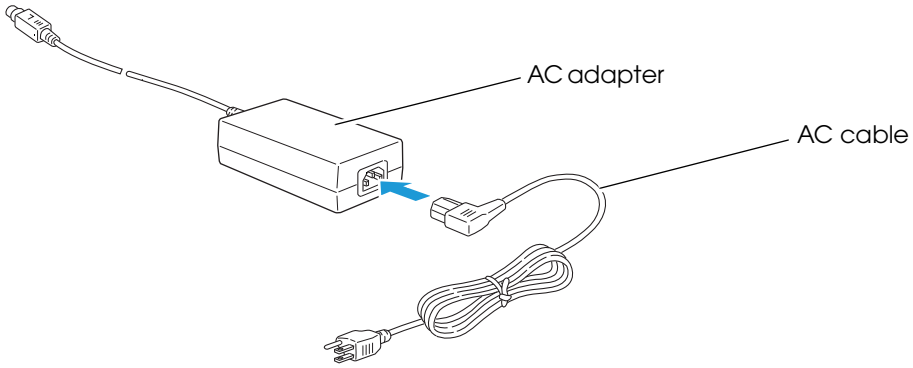
WARNING

- **Never insert the AC cable plug into a socket that does not meet the rated voltage requirements of the printer.**
  Doing so may result in damage to the printer.
- **Should a fault ever occur, immediately turn off the power to the printer and unplug the AC cable from the wall socket.**

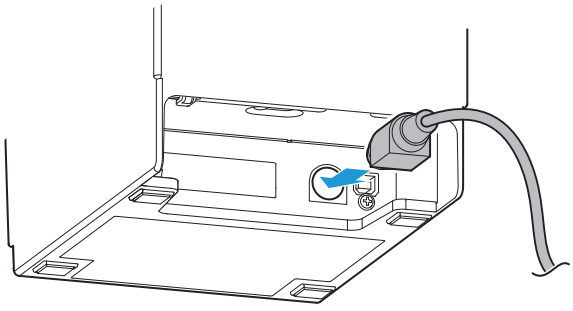
Connecting the AC cable

1 Make sure the printer is turned off.

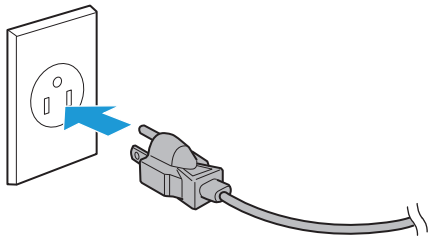
2 Connect the AC cable to the AC adapter.



3 Connect the DC cable of the AC adapter to the power supply connector.



4 Insert the AC plug into a wall socket.



Setting the Memory Switches/Receipt Enhancement

With the memory switch and R/E (receipt enhancement) function, which are software settings for this printer, you can set the various functions.

For an outline of the functions, see the following section. Use the methods shown in the table below; TM-T20II Utility, Software Setting Mode, or ESC/POS commands, to set the memory switches and R/E functions.

Item\Method			TM-T20II Utility	Software Setting Mode	ESC/POS Commands
Memory Switches	Receive buffer capacity			✔	✔
	BUSY condition			✔	✔
	Processing when data receive error			✔	✔
	USB power-saving function			✔	✔
	Release condition of receive buffer BUSY			✔	✔
	Customized Values	Paper width	✔	✔	✔
		Print density	✔	✔	✔
		Print speed	✔	✔	✔
		Character code table default	✔	✔	✔
		International character default	✔	✔	✔
		Interface selection*1	✔	✔	✔
		Power supply unit capacity	✔	✔	✔
		Number of columns	✔	✔	✔
		Autocutting after closing cover	✔	✔	✔
		Paper reduction	✔	✔	✔
		Font A auto replacement		✔	✔
		Font B auto replacement		✔	✔
		Optional buzzer	✔	✔	✔
		Logo 180 dpi emulation mode	✔	✔	✔
	Communication condition of serial interface		✔	✔	✔
	Communication condition of USB interface		✔	✔	✔
Receipt Enhancement	Auto top logo		✔*2		✔
	Auto bottom logo		✔		✔
	Auto top/bottom logo extended functions		✔*2		✔

dpi: dots per inch

*1: Enabled only for serial + USB model, and ethernet + USB model

*2: Excluding some function.

NOTE

- For information about the TM-T20II Utility, see the TM-T20II Utility User's Manual.
- For information about how to use the software setting mode, see "Software Setting Mode" on page 78.
- For information about ESC/POS commands, see the ESC/POS Quick Reference or the ESC/POS Command Reference.

Functions

Receive buffer capacity

- 4KB (initial setting)
- 45 bytes

BUSY condition

- Receive buffer full/Offline (initial setting)
- Receive buffer full

Processing when data receive error

- Prints "?" (initial setting)
- Ignored

USB power-saving function

- Disabled
- Enabled (initial setting)

NOTE

The USB power-saving function is valid only when the USB interface communication condition is set to the vendor-defined class and the system configuration is set so that the USB driver can support the USB power-saving function.

Release condition of receive buffer BUSY

- Releases when the remaining receive buffer capacity becomes 256 bytes (initial setting)
- Releases when the remaining receive buffer capacity becomes 138 bytes

NOTE

This function is enabled only when Receive buffer capacity is set to 4KB.

Paper width

- 80 mm (initial setting)
- 58 mm

> NOTE
>
> To change the paper width, you need to install the 58-mm width paper guide plate. For information about how to change the paper width, see "Changing the Paper Width" on page 37.

Print density

Selectable from levels 1 to 7 (85% ~ 115%).

Initial setting: level 4 (100%)

Depending on the paper type, it is recommended to set the print density as shown in the table below for the best print quality.

Original Paper type	Density Level
TF50KS-E, TF60KS-E, PD150R, PD160R, PD190R, P220AGB-1, P350, AF50KS-E, KT55F20, KT48F20	4 (100%)
F5041	5 (105%)

> NOTE
>
> When the print density level is increased, printing speed may be reduced.

Print speed

Selectable from levels 1 to 13 (Slow ~ Fast)

Initial setting: level 13

> NOTE
>
> Depending on print conditions, such as print duty, print head temperature, and data transmission speed, print speed is automatically adjusted, which may cause white lines due to intermittent print (the motor sometimes stops). To avoid this, keep the print speed constant by setting it lower, or set the transmission speed higher for the serial interface.

Character code table default

Selectable from 43 pages including user defined page

Initial setting: Page 0 (PC437: USA, Standard Europe)

NOTE

For the character code table, see "Character Code Tables" on page 96.

International character default

Selectable from 18 sets

Initial setting: USA

NOTE

For the character code table, see "International Character Sets" on page 140.

Interface selection (only for serial + USB model, and ethernet + USB model)

The tables below describe the modes you can set for the printer to control the dual interfaces.

Automatic selection:
The interface for UIB (Universal Interface Board) or Built-in USB to which data is transmitted first is selected.

When using the Ethernet + USB model, however, the built-in USB is not available for Automatic selection mode. Select "Fixed to built-in USB" to use the USB interface.

The selected interface is enabled until the power is turned off or the printer is reset.

For serial + USB interface models

Interface mode	Serial	Built-in USB
Automatic selection (initial setting)	Available	Available
Fixed to serial	Available	Not available
Fixed to built-in USB	Not available	Available

For ethernet + USB interface models

Interface mode	Ethernet	Built-in USB
Automatic selection (initial setting)	Available	Not available
Fixed to ethernet	Available	Not available
Fixed to built-in USB	Not available	Available

Power supply unit capacity

Selectable from levels 1 to 3 (Low ~ High)

Initial setting: level 3

Number of columns

- Standard mode (initial setting)
- 42 column mode

Autocutting after closing cover

- Cuts (initial setting)
- Does not cut

Paper reduction

Extra upper space reduction

- Disabled (initial setting)
- Enabled

Extra lower space reduction

- Disabled (initial setting)
- Enabled

Line space reduction rate

- Not reduced (initial setting)
- 25%
- 50%
- 75%

Line feed reduction rate

- Not reduced (initial setting)
- 25%
- 50%
- 75%

Barcode height reduction rate

- Not reduced (initial setting)
- 25%
- 50%
- 75%

Font A auto replacement

- Does not replace (initial setting)
- Font B

> NOTE
> This function is enabled only when Number of columns is set to Standard mode.

Font B auto replacement

- Does not replace (initial setting)
- Font A

> NOTE
> This function is enabled only when Number of columns is set to Standard mode.

Optional buzzer

> NOTE
> - For information about how to connect the optional external buzzer, see "Connecting the Optional External Buzzer" on page 55.
> - When the optional external buzzer is enabled, a cash drawer cannot be used. Be sure to disable it when you use a cash drawer.

Enables/disables

- Disabled (initial setting)
- Enabled

Buzzer frequency (Error)

- Does not sound
- Sounds 1 time
- Sounds continuously (initial setting)

Sound pattern (Autocut)

Selectable from Patterns A to E

Initial setting: Pattern A

Buzzer frequency (Autocut)

- Does not sound
- Sounds 1 time (initial setting)

Sound pattern (Pulse 1)

Selectable from Patterns A to E

Initial setting: Pattern A

Buzzer frequency (Pulse 1)

- Does not sound
- Sounds 1 time (initial setting)

Sound pattern (Pulse 2)

Selectable from Patterns A to E

Initial setting: Pattern B

Buzzer frequency (Pulse 2)

- Does not sound
- Sounds 1 time (initial setting)

Logo 180 dpi emulation mode

- Standard logo mode (initial setting)
- 180 dpi logo mode

> **NOTE** Set to 180 dpi logo mode when you register graphics for 180 dpi so that the print result (203 dpi) is the same as one printed with a 180 dpi printer.

Communication condition of serial interface

Transmission speed

- 2400 bps
- 4800 bps
- 9600 bps
- 19200 bps
- 38400 bps (initial setting)
- 57600 bps
- 115200 bps

(bps: bits per second)

Parity

- None (initial setting)
- Even
- Odd

Data bit

- 7 bits
- 8 bits (initial setting)

> **CAUTION** If set to 7 bits, printing from a printer driver is not possible.

Flow control

- DTR/DSR (initial setting)
- XON/XOFF

Communication condition of USB interface

- USB printer class (initial setting)
- USB vendor-defined class

Auto top logo

> **NOTE** TM-T20II Utility does not support the function for Number of lines to be deleted below top logo.

Key-code

Selectable from key-codes of registered logos

Alignment

- Left
- Center
- Right

Number of lines to be deleted below top logo

Auto bottom logo

Key-code

Selectable from key-codes of registered logos

Alignment

- Left
- Center
- Right

Auto top/bottom logo extended functions

NOTE

TM-T20II Utility does not support the following functions.

- Top logo print while paper feeding to the cutting position
- Top logo print while clearing the buffer to recover from a recoverable error
- Top logo print after paper feeding with the Feed button has finished

Top logo print while paper feeding to the cutting position

- Disabled (initial setting)
- Enabled

Top logo print when printer is powered on

- Disabled (initial setting)
- Enabled

Top logo print when roll paper cover is closed

- Disabled
- Enabled (initial setting)

Top logo print while clearing the buffer to recover from a recoverable error

- Disabled
- Enabled (initial setting)

Top logo print after paper feeding with the Feed button has finished

- Disabled (initial setting)
- Enabled

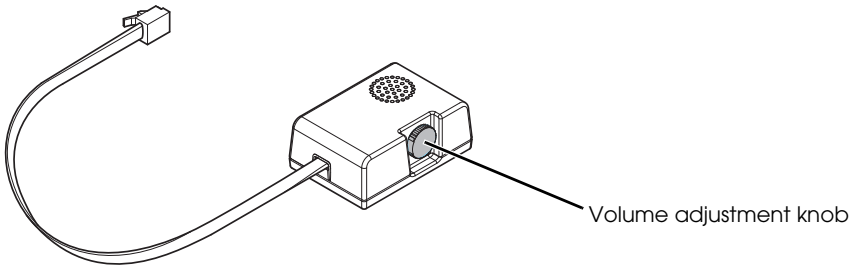
Connecting the Optional External Buzzer

When the optional external buzzer (model: OT-BZ20) is connected to the DK connector of the printer, you can set the printer so that it beeps when you send commands, when an error occurs, when executed autocutting, and when detected paper end. Settings for sound patterns and frequency depending on the occasions the buzzer beeps are also available.

You need to set the memory switches for buzzer enable/disable setting, sound pattern setting, and frequency setting. For information about the memory switches, see "Setting the Memory Switches/Receipt Enhancement" on page 46.

CAUTION

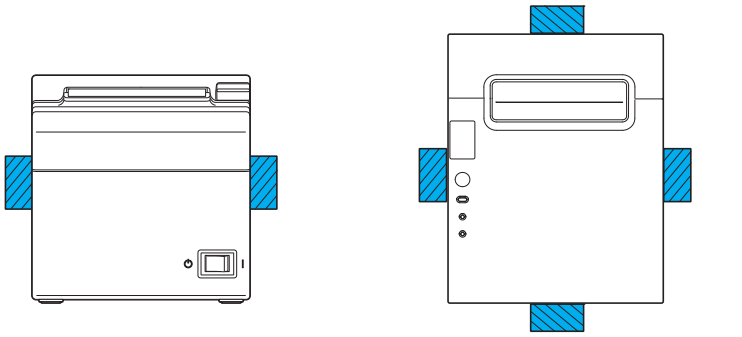
- Be sure to turn off the printer before you connect/disconnect the optional external buzzer.
- Do not connect both the optional external buzzer and the cash drawer to the printer at the same time by using a branched connector.



Connecting the Buzzer Unit

The buzzer unit is recommended to be installed in the following positions.

- When using the printer horizontally: either side
- When using the printer vertically: side or top
- When using the printer on the wall: side, top, or bottom

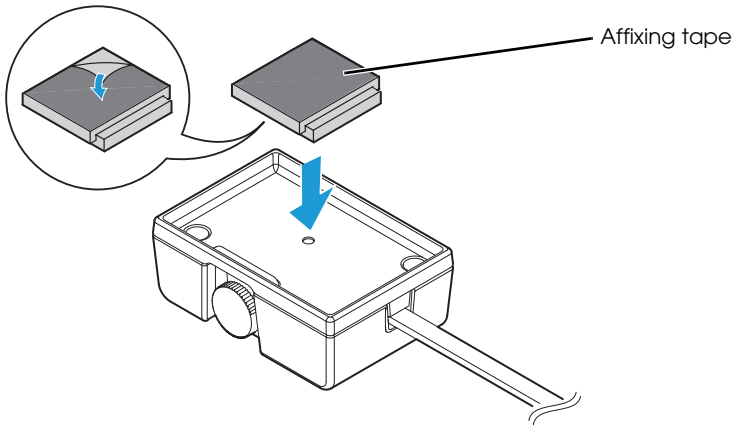


Horizontal installation Vertical/Wall-hanging installation

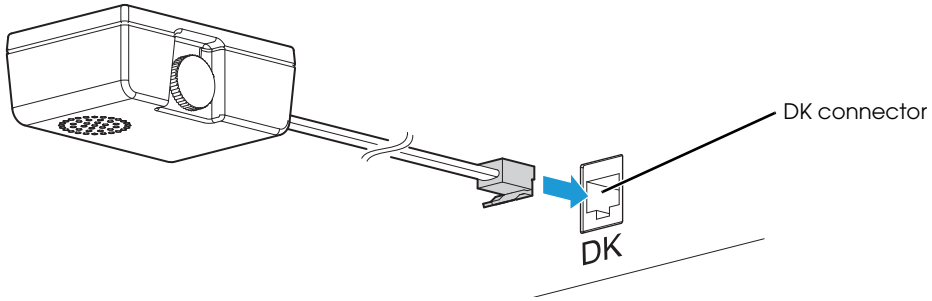
CAUTION

- Do not install the buzzer unit at the roll paper exit.
- To prevent liquid from entering inside, it is recommended to install the buzzer unit so that the volume adjustment knob is positioned sideways or downward.

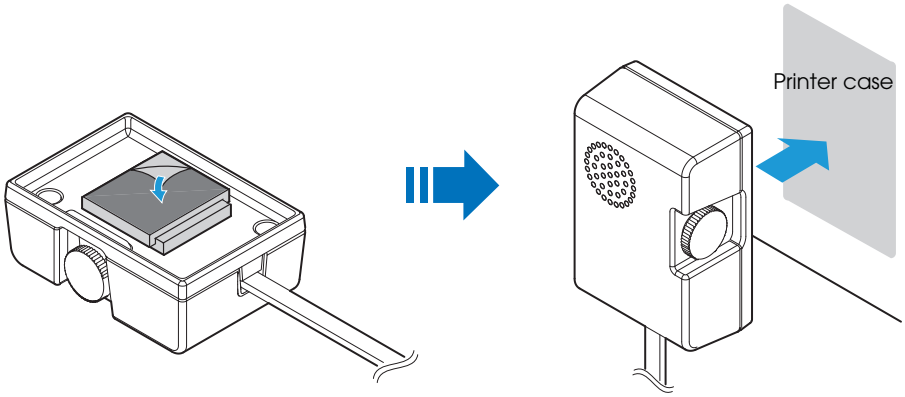
1. Turn off the printer.
2. Clean and dry the printer case where the buzzer unit will be installed.
3. With 2 included pieces of the affixing tape combined, peel off the backing paper on one side, and stick the tape in the center of the attaching surface of the buzzer unit.



4 Connect the cable of the buzzer unit to the DK connector on the printer.



5 Peel off the backing paper on the other side of the affixing tape, and attach the buzzer unit to the printer case.



Connecting the Cash Drawer

CAUTION

- Do not connect both the optional external buzzer and the cash drawer to the printer at the same time by using a branched connector.
- When the optional external buzzer is enabled with the memory switch (see "Setting the Memory Switches/Receipt Enhancement" on page 46), a cash drawer cannot be used. Be sure to disable it when you use a cash drawer.
- Two driver transistors cannot be energized simultaneously.
- Leave intervals longer than 4 times the drawer driving pulse when sending it continuously.

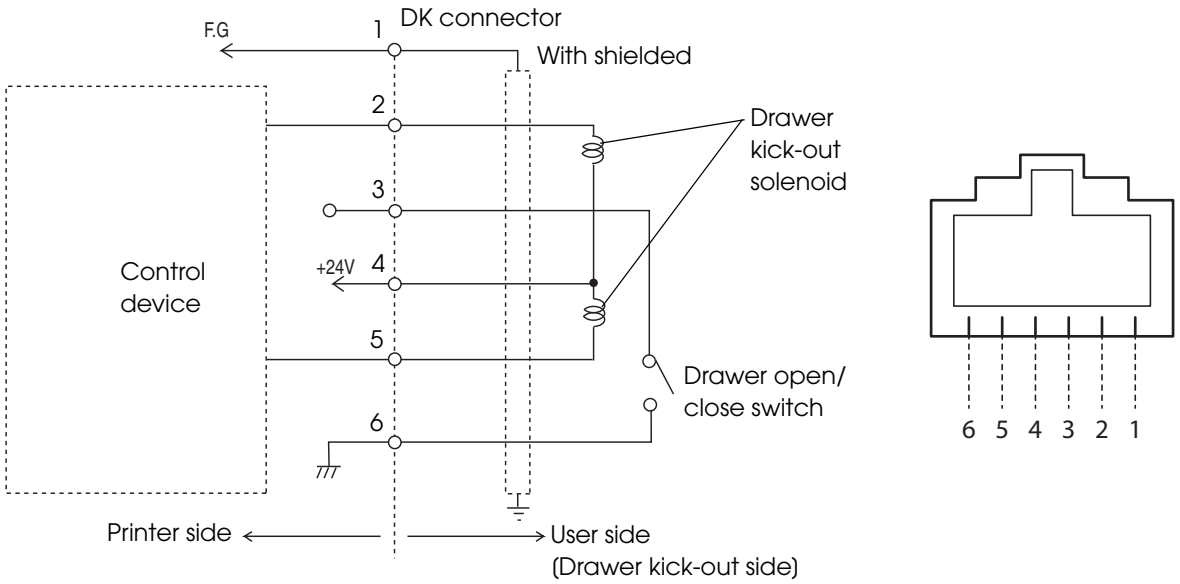
Required specifications of cash drawers

Specifications of drawers differ depending on makers or models. When you use a drawer other than specified, make sure its specification meets the following conditions.

Otherwise, devices may be damaged.

- The load, such as a drawer kick-out solenoid, must be connected between pins 4 and 2 or pins 4 and 5 of the DK connector.
- When the drawer open/close signal is used, a switch must be provided between DK connector pins 3 and 6.
- The resistance of the load, such as a drawer kick-out solenoid, must be 24 Ω or more or the input current must be 1A or less.
- Be sure to use the 24V power output on drawer-kick out connector pin 4 for driving the equipment.

Drawer Connection Diagram

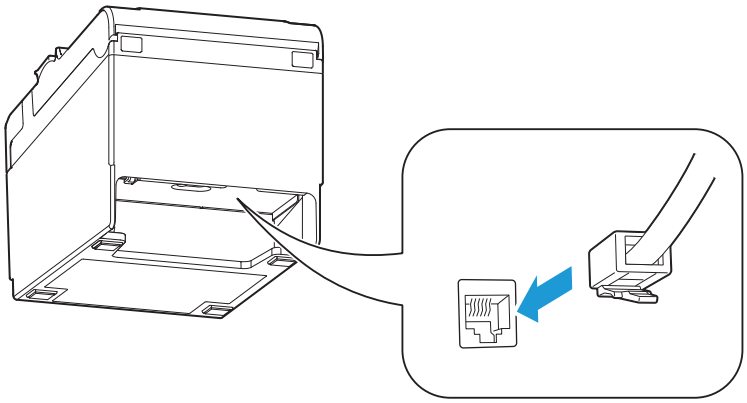


Connecting the DK cable

WARNING

- **Use a shield cable for the DK cable.**
- **Do not insert a telephone line into the DK connector.**
  Doing so may damage the telephone line or printer.

Connect the DK cable to the DK connector by pressing firmly until the connector clicks into place.



Application Development Information

This chapter describes how to control the printer and gives information useful for printer application development.

How to Control the Printer

Use a driver or ESC/POS commands to control the printer.

Selecting a Driver

Choose one of the drivers listed in "Printer Drivers" on page 68, depending on the application operating environment. You cannot control a single printer with more than one driver.
For information about the driver operating environment, see the installation manual for each driver.

When you newly develop an application

- Use APD if you want to print TrueType fonts or print many graphics.
- OPOS ADK is recommended for system extensibility. An OPOS driver is provided for various peripherals and it is a POS industry standard now. It enables POS system efficiency, reduction of development cost, and effective use of application assets.

> **NOTE** You can use all functions, including ones not supported by OPOS ADK or APD, by using ESC/POS commands through your driver. Use the DIRECT I/O function of OPOS ADK, the control A command of APD, or Status API to send ESC/POS commands from each driver. (See "ESC/POS command functions" on page 62.)

ESC/POS Commands

ESC/POS is the Epson original printer command system. With ESC/POS commands, you can directly control all the TM printer functions, but detailed knowledge of printer specifications or combination of commands is required, compared to using a driver.

The ESC/POS command functions are listed as follows. For detailed information about ESC/POS commands, see the ESC/POS Quick Reference or the ESC/POS Command Reference.

You can view the ESC/POS Command Reference by accessing the URL described in the "How to Get Drivers, Manuals, and the Utility" on page 71 with a user ID that has been registered as an account.

ESC/POS command functions

Commands for printing
Print and line feed
Print and return to standard mode (in page mode)
Print and carriage return
Print data in page mode
Print and feed paper
Print and feed *n* lines
Commands for line spacing
Set line spacing
Select default line spacing
Commands for print character
Cancel print data in page mode
Set right-side character spacing
Select print mode(s)
Select/cancel user-defined character set
Define user-defined characters
Turn underline mode on/off
Cancel user-defined characters
Turn emphasized mode on/off
Turn double-strike mode on/off

Select character font
Select an international character set
Turn 90° clockwise rotation mode on/off
Select character code table
Turn upside-down print mode on/off
Select character size
Turn white/black reverse print mode on/off
Turn smoothing mode on/off
Commands for panel buttons
Enable/disable panel buttons
Commands for print positions
Horizontal tab
Set absolute print position
Set horizontal tab positions
Select print direction in page mode
Set print area in page mode
Set relative print position
Select justification
Set absolute vertical print position in page mode
Set left margin
Set print area width
Set relative vertical print position in page mode
Commands for bit image
Select bit-image mode
Transmit the NV graphics memory capacity
Print the graphics data in the print buffer
Transmit the remaining capacity of the NV graphics memory
Transmit the remaining capacity of the download graphics memory
Transmit the key code list for defined NV graphics
Delete all NV graphics data

Delete the specified NV graphics data
Define the NV graphics data (raster format)
Print the specified NV graphics data
Transmit the key code list for defined download graphics
Delete all download graphics data
Delete the specified download graphics data
Define the downloaded graphics data (raster format)
Print the specified download graphics data
Store the graphics data in the print buffer (raster format)
Define downloaded bit image
Print downloaded bit image
Define Windows BMP NV graphics data
Define Windows BMP download graphics data
Commands for status
Transmit real-time status
Enable/disable Automatic Status Back (ASB)
Transmit status
Commands for barcode
Select print position of HRI characters
Select font for HRI characters
Set barcode height
Print barcode
Set barcode width
Commands for two-dimensional codes
PDF417: Set the number of columns in the data region
PDF417: Set the number of rows
PDF417: Set the width of module
PDF417: Set the row height
PDF417: Set the error correction level
PDF417: Select the options

PDF417: Store the data in the symbol storage area
PDF417: Print the symbol data in the symbol storage area
PDF417: Transmit the size information of the symbol data in the symbol storage area
QR Code: Select the model
QR Code: Set the size of module
QR Code: Select the error correction level
QR Code: Store the data in the symbol storage area
QR Code: Print the symbol data in the symbol storage data area
QR Code: Transmit the size information of the symbol data in the symbol storage area
MaxiCode: Select the mode
MaxiCode: Store the data in the symbol storage area
MaxiCode: Print the symbol data in the symbol storage area
MaxiCode: Transmit the size information of the symbol data in the symbol storage area
Two-dimensional GS1 DataBar: Set the width of module
Two-dimensional GS1 DataBar: Set the maximum width of GS1 DataBar Expanded Stacked
Two-dimensional GS1 DataBar: Store the data in the symbol storage area
Two-dimensional GS1 DataBar: Print the symbol data in the symbol storage area
Two-dimensional GS1 DataBar: Transmit the size information of the symbol data in the symbol storage area
Composite Symbology: Set the width of module
Composite Symbology: Set the maximum width of GS1 DataBar Expanded Stacked
Composite Symbology: Select font for HRI characters
Composite Symbology: Store the data in the symbol storage area
Composite Symbology: Print the symbol data in the symbol storage area
Composite Symbology: Transmit the size information of the symbol data in the symbol storage area
Commands for mechanical control
Select cut mode and cut paper
Commands for customization
Write to NV user memory
Read from NV user memory

Change into the user setting mode
End the user setting mode session
Set values for the memory switch
Transmit the setting of the memory switch
Set the customized setting values
Transmit the customized setting values
Set conditions for serial interface communication
Transmit conditions for serial interface communication
Set conditions for USB interface communication
Transmit conditions for USB interface communication
Commands for macro function
Start/end macro definition
Execute macro
Commands for receipt enhancement
Cancel set values for top/bottom logo printing
Transmit set values for top/bottom logo printing
Set top logo printing
Set bottom logo printing
Make extended settings for top/bottom logo printing
Enable/disable top/bottom logo printing
Miscellaneous commands
Send real-time request to printer
Generate pulse in real-time
Execute power-off sequence
Control buzzer (optional external buzzer)
Clear buffer(s)
Sound buzzer (sound pattern specified) (optional external buzzer)
Select peripheral device
Initialize printer
Select page mode

Select standard mode
Generate pulse
Execute test print
Enable/disable real-time command
Specifies the process ID response
Select the print control mode
Select the print speed
Transmit printer ID
Set horizontal and vertical motion units
Initialize maintenance counter
Transmit maintenance counter

Software and Manuals

The following software and manuals are provided for application development.

Printer Drivers

Software	Manual
EPSON Advanced Printer Driver (APD): In addition to ordinary Windows driver functions, this driver has controls specific to POS, such as controls for paper cut, a cash drawer, and customer display. The Status API (Epson original DLL) that monitors printer status and sends ESC/POS commands is also attached to this driver.	• APD Install Manual • APD TM/BA/EU Printer Manual • APD Printer Specification • Status API Manual • Devmode API/PRINTERINFO Manual • Sample Program Guide • TM-T20II Software User's Manual
EPSON OPOS ADK: This OCX driver can control POS peripherals using OLE technology*1. Because controlling POS peripherals with original commands is not required on the application side, efficient system development is possible.	• OPOS Installation Manual • User's Manual • Application Development Guide • UnifiedPOS Retail Peripheral Architecture*2 • Sample Program Guide
EPSON OPOS ADK for .NET: OPOS ADK for .NET allows you to develop applications that are compatible with Microsoft POS for .NET. When developing applications, use a separate development environment such as Microsoft Visual Studio .NET.	• OPOS ADK for .NET Installation Guide • User's Reference (SetupPOS) • Application Development Guide (POSPrinter TM-T20II) • UnifiedPOS Retail Peripheral Architecture*2
EPSON JavaPOS ADK (Windows/Linux): JavaPOS is the standard specification which defines an architecture and device interface (API) to access various POS devices from a Java based system. Using JavaPOS standard API allows control with Java-based applications of functions inherent to each device. A flexible design with Java language and JavaPOS enables many different types of computer systems, such as stand alone or network configuration, to use a same application. You can use JavaPOS to build applications and drivers independently of platforms. This allows flexible configurations using thin clients to meet the system requirements.	JavaPOS ADK Installation Guide

Software	Manual
EPSON TM Virtual Port Driver: This driver is a Serial-USB/Ethernet and Parallel-USB/Ethernet conversion driver to make an EPSON TM/BA/EU printer connected via USB/Ethernet accessible from a POS application through virtual COM ports and a virtual LPT port. Without making changes in the POS application that controls devices connected through serial or parallel interfaces, devices connected via USB/Ethernet can be directly controlled with ESC/POS commands.	TM Virtual Port Driver User's Manual
TM-T20II Mac Printer Driver: Mac printer driver allows you to control the TM-T20II using Common UNIX Printing System (CUPS) on Mac OS X. This is a full raster printer driver. It is able to print images, text, and vector graphics etc., that an application displays. With this driver many printer controls are possible, such as paper cut timing control, cash drawer control, printing speed control, blank line skip, and upside-down printing. It also provides API and dialogues for print setting, sample applications, and logo setting utility.	TM-T20II Mac Printer Driver User's Manual
Epson TM/BA Series Thermal Printer Driver: This driver allows you to control the TM-T20II using Common UNIX Printing System (CUPS) on GNU/Linux. This is a full raster printer driver. It is able to print images, text, and vector graphics etc., that an application displays. With this driver many printer control are possible, such as paper cut timing control, cash drawer control, printing speed control, blank line skip, and upside-down printing.	• Epson TM/BA Series Thermal Printer Driver Installation Manual • Epson TM/BA Series Thermal Printer Driver Manual • TM-T20II Thermal Printer Driver Manual

*1: OLE technology developed by Microsoft divides software into part blocks. The OPOS driver is presupposed to be used with a development environment such as Visual Basic, unlike ordinary Windows drivers. It is not a driver to be used for printing from commercial applications.

*2: This guide describes general information on how to control printers using the OPOS ADK (in the chapter "POS Printer" and "Appendix-A"). It does not describe Epson's specific functions.

Utilities

Software	Manual
TM-T20II Utility: Use for the following functions: • Checking current settings • Operation check • Storing logos • Coupon settings • Paper reduction settings • Automatic paper cut settings • Printing control settings • Font settings • Optional buzzer settings • Communication I/F settings • Backup/restore	• TM-T20II Software User's Manual • TM-T20II Utility User's Manual
EpsonNet Config: Use for IP address setting.	EpsonNet Config Operations Guide
EpsonNet Simple Viewer: Use for checking the status of EPSON printers connected to a network and EPSON TM/BA printers connected to computers on a network.	EpsonNet Simple Viewer User's Manual
TM/BA/EU Printer Remote Configuration Tool: This is a package of EpsonNet Simple Viewer and TM-T20II Utility. First install this software in the computer with the administrator's authority, and set up the firewall. Next, install the printer driver in each client computer and set up the firewall. Then you can check the status of and configure the printer connected to a client computer on the network from the computer with the administrator's authority.	TM/BA/EU Printer Remote Configuration Tool User's Manual

How to Get Drivers, Manuals, and the Utility

Drivers, manuals, and the TM-T20II Utility can be installed by the TM-T20II installer in the included TM-T20II Software & Documents Disc.

- For customers in North America, go to the following web site:
  http://www.epsonexpert.com/
- For customers in other countries, go to the following web site:
  http://download.epson-biz.com/?service=pos

Setting/Checking Modes

Besides the ordinary print mode, the printer has the following modes to set or check settings of the printer.

- Self-test Mode
- NV Graphics Information Print Mode (page 74)
- Receipt Enhancement Information Print Mode (page 76)
- Software Setting Mode (page 78)
- Hexadecimal Dumping Mode (page 80)

Self-test Mode

In the self-test mode, the printer prints the current printer status and a rolling pattern test print of resident characters.

The current status print includes the following information:

- Control ROM version
- Interface type
- Receive buffer size
- BUSY condition
- Resident fonts
- Print density
- Maintenance counter information (head running length, number of times of autocutting)
- Memory switch settings

Starting the self-test mode

Follow the steps below to run this mode.

1 Close the roll paper cover.

2 While pressing the Feed button, turn on the printer. (Keep pressing the Feed button until the printer starts printing.)

The printer starts printing current status of the printer.

When the printer finishes printing the printer status, the following message is printed and the Paper LED flashes. (The printer is now in the self-test wait mode.):

"Select Modes by pressing Feed button.
Continue SELF-TEST: Less than 1 second
Mode Selection: 1 second or more"

3 Press the Feed button to start the test print (less than 1 second).

The printer starts test printing. (A rolling pattern is printed using only the resident character set.)

> **NOTE** If you select "Mode Selection," the printer goes to "NV Graphics Information Print Mode" (page 74), "Receipt Enhancement Information Print Mode" (page 76), or "Software Setting Mode" (page 78).

After the test printing has finished, the printer prints the following message, and then the printer is initialized and returned to the normal mode.

"*** completed***"

NV Graphics Information Print Mode

You can confirm the following information by running the NV graphics information print mode:

- Capacity of the NV graphics
- Used capacity of the NV graphics
- Unused capacity of the NV graphics
- Number of NV graphics that are registered
- Key code, number of dots in X direction, number of dots in Y direction, number of colors to be defined.
- NV graphics data

Starting the NV graphics information print mode

Follow the steps below to run this mode.

1 Close the roll paper cover.

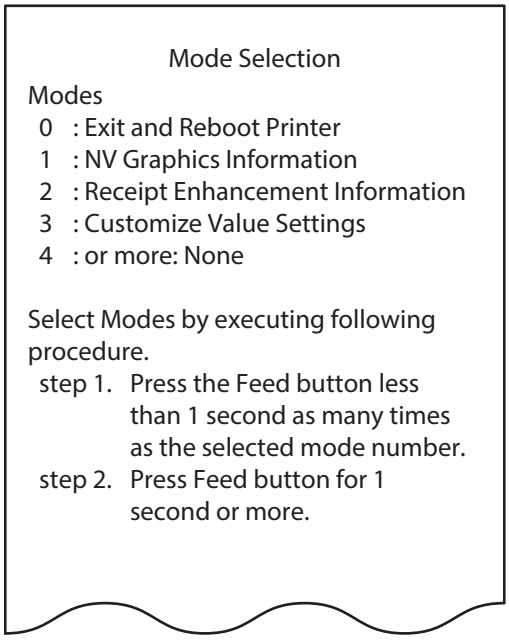
2 While pressing the Feed button, turn on the printer. (Keep pressing the Feed button until the printer starts printing.)

The printer starts printing current status of the printer.

When the printer finishes printing the printer status, the following message is printed and the Paper LED flashes. (The printer is now in the self-test wait mode.):

"Select Modes by pressing Feed button.
Continue SELF-TEST: Less than 1 second
Mode Selection: 1 second or more"

3 Press the Feed button for 1 second or more to enter the Mode Selection.
The printer starts printing instructions.


Mode Selection
Modes
0 : Exit and Reboot Printer
1 : NV Graphics Information
2 : Receipt Enhancement Information
3 : Customize Value Settings
4 : or more: None

Select Modes by executing following procedure.
step 1. Press the Feed button less than 1 second as many times as the selected mode number.
step 2. Press Feed button for 1 second or more.

4 Press the Feed button once, and then hold down the Feed button until the printer starts printing the NV graphics information.

5 Turn off the printer or select "Exit and Reboot Printer" to exit this mode.

Receipt Enhancement Information Print Mode

You can confirm the following information by running the R/E information mode:

- Automatic top logo setting
- Automatic bottom logo setting
- Extended settings for automatic top/bottom logo

Starting the R/E information print mode

Follow the steps below to run this mode.

1 Close the roll paper cover.

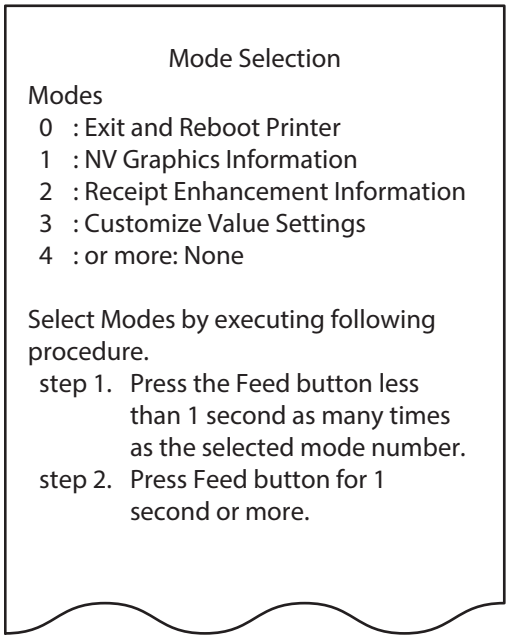
2 While pressing the Feed button, turn on the printer. (Keep pressing the Feed button until the printer starts printing.)

The printer starts printing current status of the printer.

When the printer finishes printing the printer status, the following message is printed and the Paper LED flashes. (The printer is now in the self-test wait mode.):

"Select Modes by pressing Feed button.
Continue SELF-TEST: Less than 1 second
Mode Selection: 1 second or more"

3 Press the Feed button for 1 second or more to enter the Mode Selection.
The printer starts printing instructions.



Mode Selection

Modes
0 : Exit and Reboot Printer
1 : NV Graphics Information
2 : Receipt Enhancement Information
3 : Customize Value Settings
4 : or more: None

Select Modes by executing following procedure.
step 1. Press the Feed button less than 1 second as many times as the selected mode number.
step 2. Press Feed button for 1 second or more.

4 Press the Feed button twice, and then hold down the Feed button until the printer starts printing the R/E information.

5 Turn off the printer or select "Exit and Reboot Printer" to exit this mode.

Starting the Software setting mode

Follow the steps below to run this mode.

1 Close the roll paper cover.

2 While pressing the Feed button, turn on the printer. (Keep pressing the Feed button until the printer starts printing.)

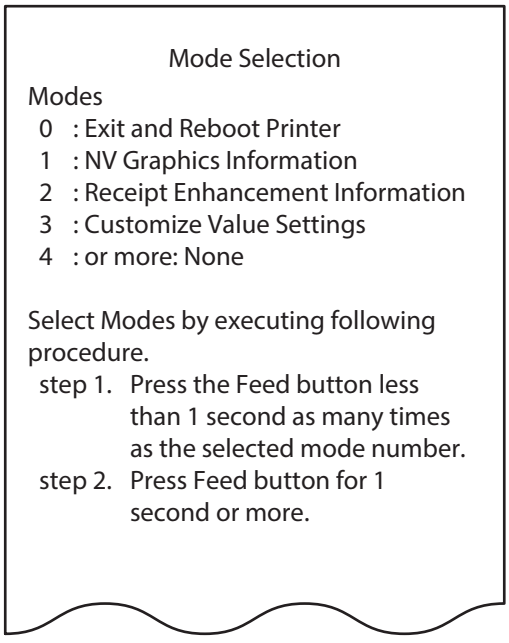
The printer starts printing current status of the printer.

When the printer finishes printing the printer status, the following message is printed and the Paper LED flashes. (The printer is now in the self-test wait mode.):

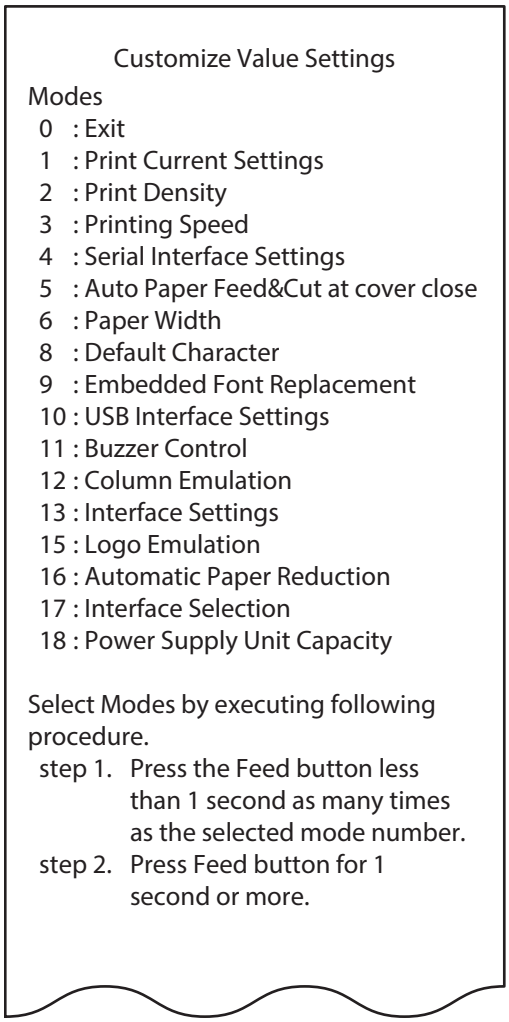
"Select Modes by pressing Feed button.
Continue SELF-TEST: Less than 1 second
Mode Selection: 1 second or more"

3 Press the Feed button for 1 second or more to enter the Mode Selection.

The printer starts printing instructions.


Mode Selection
Modes
0 : Exit and Reboot Printer
1 : NV Graphics Information
2 : Receipt Enhancement Information
3 : Customize Value Settings
4 : or more: None
Select Modes by executing following procedure.
step 1. Press the Feed button less than 1 second as many times as the selected mode number.
step 2. Press Feed button for 1 second or more.

4 Press the Feed button three times, and then hold down the Feed button until the printer starts printing the setting instructions.



Customize Value Settings

Modes
- 0 : Exit
- 1 : Print Current Settings
- 2 : Print Density
- 3 : Printing Speed
- 4 : Serial Interface Settings
- 5 : Auto Paper Feed&Cut at cover close
- 6 : Paper Width
- 8 : Default Character
- 9 : Embedded Font Replacement
- 10 : USB Interface Settings
- 11 : Buzzer Control
- 12 : Column Emulation
- 13 : Interface Settings
- 15 : Logo Emulation
- 16 : Automatic Paper Reduction
- 17 : Interface Selection
- 18 : Power Supply Unit Capacity

Select Modes by executing following procedure.
- step 1. Press the Feed button less than 1 second as many times as the selected mode number.
- step 2. Press Feed button for 1 second or more.

5 Select the setting item by pressing the Feed button (no longer than 1 second) for the number of times indicated on the print.
Then hold down the Feed button until the printer starts printing the setting condition.

6 Select the setting condition by pressing the Feed button (no longer than 1 second) for the number of times indicated on the print.
Then hold down the Feed button until the printer starts printing the setting result.

When one setting has been completed, the printer stores the setting.

See "Setting Conditions for Software Setting Mode" on page 93 for the selectable items.

7 Turn off the printer or select "Exit" and "Exit and Reboot Printer" to exit this mode.

> **NOTE**
> - To select the item number 0, hold down the Feed button until the printer starts printing.
> - If you pressed the button for the number of times that is not listed on the print, the operation is invalid, and the same result is printed again.

Hexadecimal Dumping Mode

In the hexadecimal dumping mode, the printer prints the data transmitted from a host computer in hexadecimal numbers and their corresponding characters. It enables you to check if data is transmitted to the printer correctly.

Starting the hexadecimal dumping mode

Follow the steps below to run this mode.

> **CAUTION**
> - If there is no character corresponding to print data, "." is printed.
> - If print data is less than one line, press the Feed button to print the line.

1 Open the roll paper cover.

2 While pressing the Feed button, turn on the printer.

3 Close the roll paper cover.
The printer starts printing data received from then on in hexadecimal numbers and their corresponding characters.

Turn off the printer or press the Feed button three times to return to the normal mode.

Printing example:

```
Hexadecimal Dump
To terminate hexadecimal dump,
press FEED button three times.




1B 21 00 1B 26 02 40 40 1B 69 . ! . . & . @ @ . i
1B 25 01 1B 63 34 00 1B 30 31 . % . . c 4 . . 0 1
41 42 43 44 45 46 47 48 49 4A A B C D E F G H I J

           ***  completed  ***
```

Handling

This chapter describes basic handling of the printer.

Installing and Replacing Roll Paper

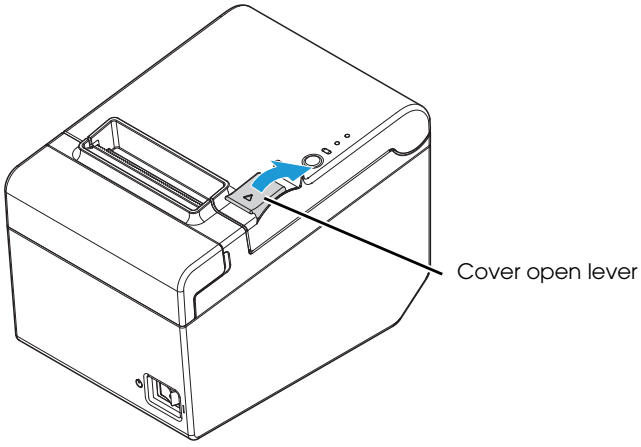
CAUTION

- **Do not open the roll paper cover during printing or autocutting.**
  The printer may be damaged.
- **Do not touch the manual cutter with your hands when installing or replacing the roll paper.**
  Otherwise, you may be injured because the manual cutter blade is sharp.

CAUTION

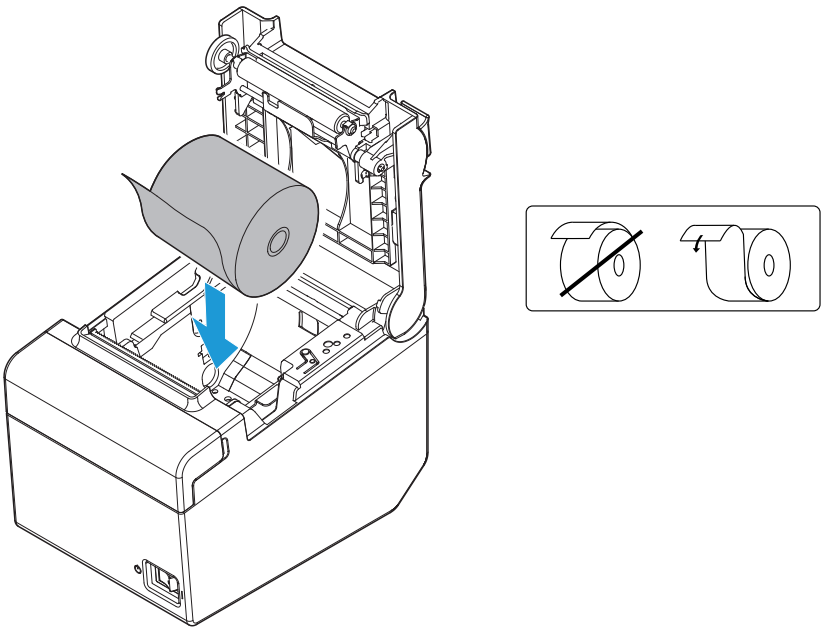
- Use roll paper that meets the printer specification. For details about paper specification, see "Paper Specifications" on page 25.
- Paper must not be pasted to the roll paper core.

1 Open the roll paper cover by using the cover open lever.



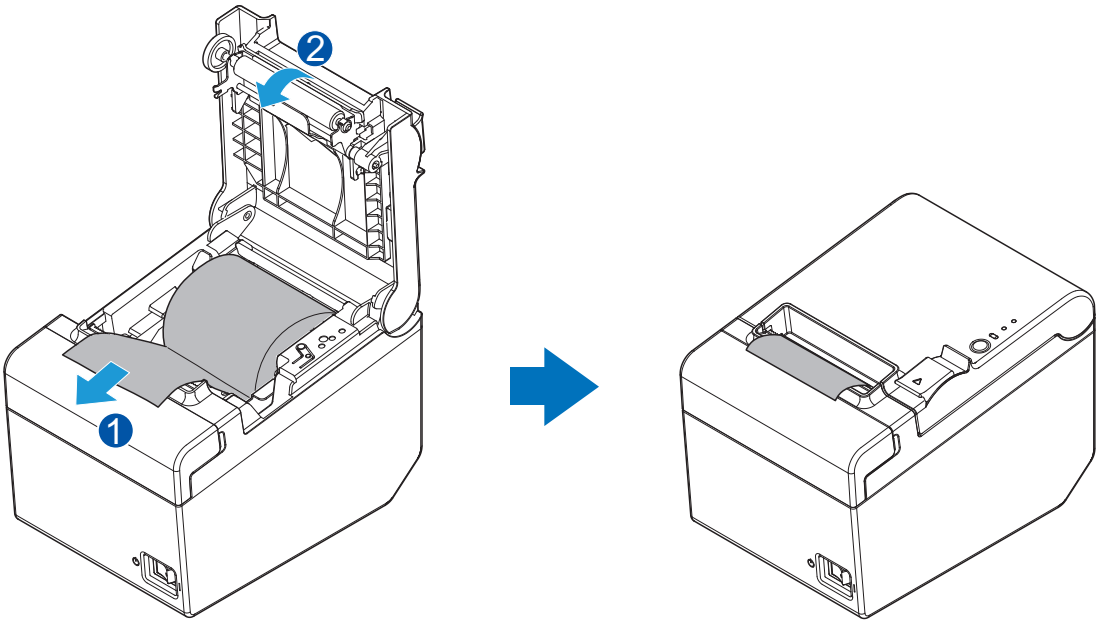
2 Remove the used roll paper core, if it is installed.

3 Install the roll paper in the correct direction.



4 Pull out some roll paper, and close the roll paper cover.

When the printer power is on, the roll paper is automatically cut. (initial setting)



Removing Jammed Paper

CAUTION

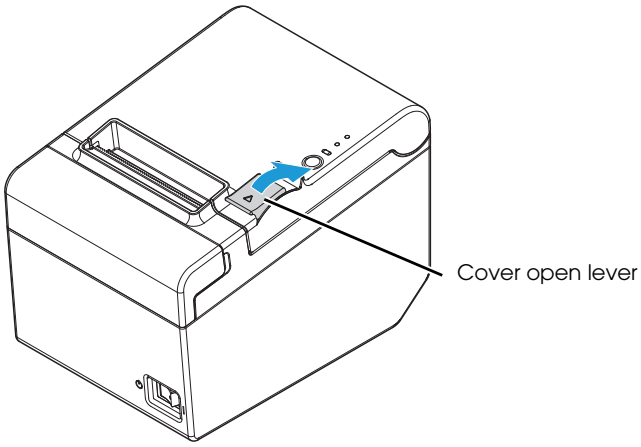
Do not touch the thermal head. (See "Cleaning the Printer" on page 85.)
It can be very hot after printing.

CAUTION

When a paper jam occurs, never pull out the paper forcibly.

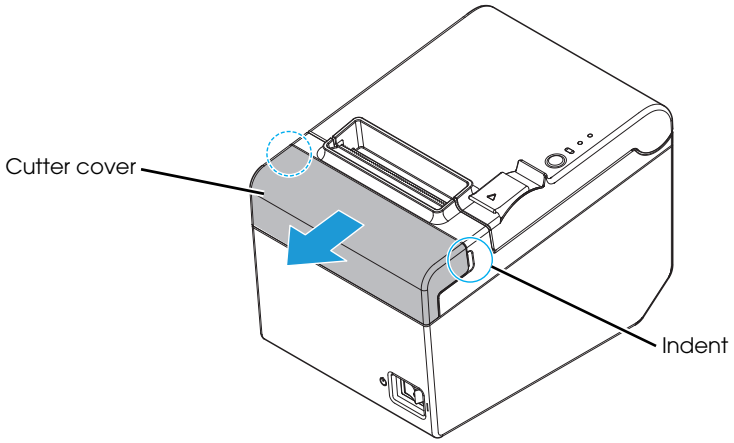
If a paper jam occurred, follow the steps below to recover.

1. Turn off the printer.
2. Open the roll paper cover by using the cover open lever.

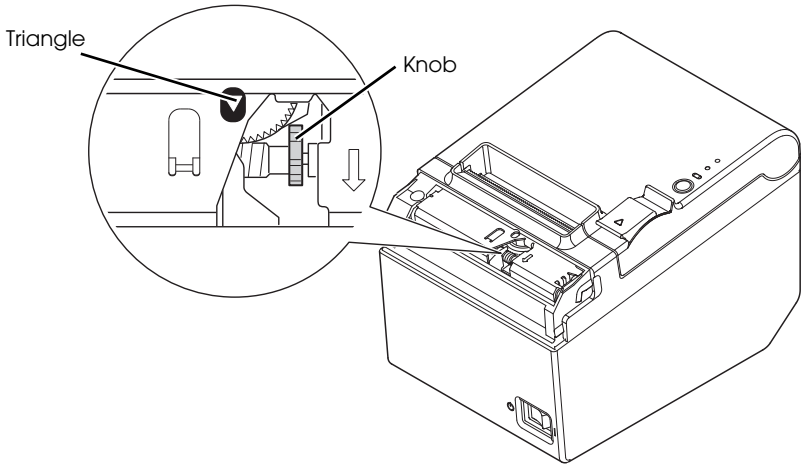


3 If the cover cannot be opened, move the stuck auto cutter blade with the following method.

Remove the cutter cover by sliding toward the front.



Turn the knob in the direction of the arrow until the triangle mark is appeared in the opening. (This returns the cutter blade to the standby position.)



Attach the cutter cover.

4 Remove the jammed paper.

5 Close the roll paper cover and turn on the printer.

Cleaning the Printer

Cleaning the Printer Case

Be sure to turn off the printer, and wipe the dirt off the printer case with a dry cloth or a damp cloth.

CAUTION

Never clean the product with alcohol, benzine, thinner, or other such solvents.
Doing so may damage or break the parts made of plastic and rubber.

Cleaning the Thermal Head/Platen Roller

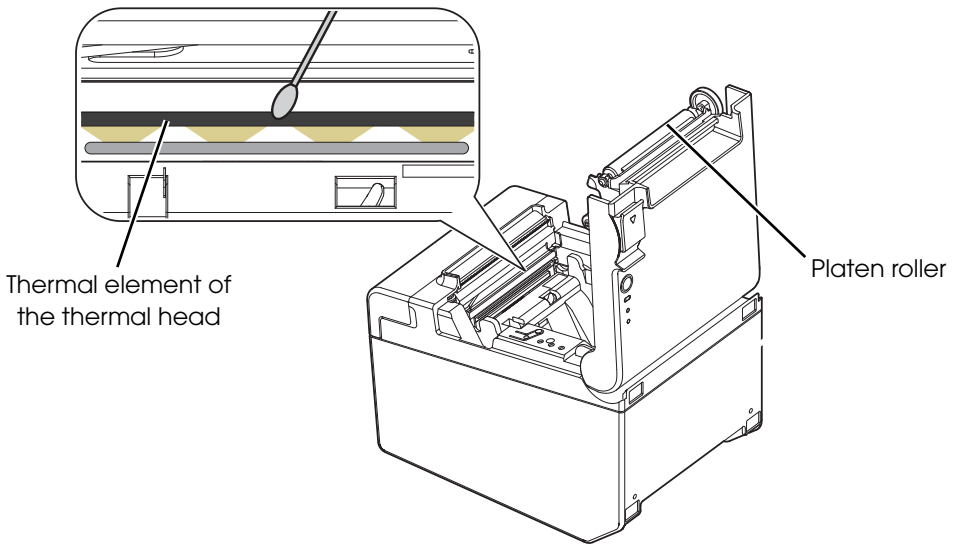
Epson recommends cleaning the thermal head periodically (generally every 3 months) to maintain receipt print quality.

Depending on the roll paper used, paper dust may stick to the platen roller and the paper may not be fed correctly. To remove the paper dust, clean the platen roller.

Turn off the printer, open the roll paper cover, and clean the thermal elements of the thermal head/platen roller with a cotton swab moistened with an alcohol solvent (ethanol or IPA).

CAUTION

- **After printing, the thermal head can be very hot. Do not touch it and let it cool before you clean it.**
- **Do not damage the thermal head by touching it with your fingers or any hard object.**



Preparing for Transport

Follow the steps below to transport the printer.

1. Turn off the printer.
2. Disconnect the AC cable from the socket.
3. Remove the roll paper.
4. Pack the printer upright.

Replacement of the TM-T20

The TM-T20II is designed so that it can smoothly replace the TM-T20. This chapter describes precautions for the replacement.

Additional Functions and Functional Improvements

Print Speed

The TM-T20II has increased its print speed up to a maximum of 200 mm/s.

	TM-T20II	TM-T20
Maximum print speed	200 mm/s {7.87"/s}	150 mm/s {5.91"/s}

Note: When the printer prints text (built-in fonts) with the default print density level at 24 V and 25°C {77°F}.

CAUTION Depending on print conditions such as print duty, print head temperature, and data transmission speed, print speed is automatically adjusted.

Appendix

Specifications of Interface and Connector

USB (Universal Serial Bus) Interface

USB interface connector

Has a USB upstream port connector (USB type-B connector)

USB transmission specifications

USB function

Overall specifications		According to USB 2.0 specifications
Transmission speed		USB Full-Speed (12 Mbps)
Transmission method		USB bulk transmission method
Power supply specifications		USB self power supply function
Current consumed by USB bus		2 mA
USB packet size (with full-speed connection)	USB bulk OUT (TM)	64 bytes
	USB bulk IN (TM)	64 bytes
USB device class		Select USB printer class or USB vendor-defined class with the memory switch.

USB descriptor

		USB vendor-defined class	**USB printer class**
Vendor ID		04b8h	04b8h
Product ID		0202h	0E15h
String Descriptor	Manufacturer	EPSON	EPSON
	Product	TM-T20II	TM-T20II
	Serial number	Character string based on the product serial number	Character string based on the product serial number

Interface board specifications (RS-232-compliant)

Item		Specifications
Data transfer method		Serial
Synchronization		Asynchronous
Handshake		Select one of the following with the memory switch: • DTR/DSR • XON/XOFF
Signal level	MARK	-3V to -15V logic "1"/OFF
	SPACE	+3V to +15V logic "0"/ON
Transmission speed		Select one of the following with the memory switch: 2400/4800/9600/19200/38400/57600/115200 bps (bps: bits per second)
Bit length		Select one of the following with the memory switch: • 7 bit • 8 bit
Parity		Select one of the following with the memory switch: • None • Even • Odd
Stop bit		1 or more bits However, the stop bit for data transfer from the printer is fixed to 1 bit.
Connector		DSUB 25-pin (female) connector

Functions of each connector pin

Pin no.	Signal name	Signal direction	Function
1	FG	—	Frame ground
2	TXD	Output	Transmission data
3	RXD	Input	Reception data
4	RTS	Output	Equivalent to DTR signal
6	DSR	Input	This signal indicates whether the host computer can receive data. SPACE indicates that the host computer can receive data. MARK indicates that the host computer cannot receive data. When DTR/DSR control is selected, the printer transmits data after confirming this signal (except if transmitted using some ESC/POS commands). When XON/XOFF control is selected, the printer does not check this signal. The printer is reset when the signal remains MARK for a pulse width of 1 ms or more.
7	SG	—	Signal ground
20	DTR	Output	1) When DTR/DSR control is selected, this signal indicates whether the printer is BUSY. • SPACE status Indicates that the printer is ready to receive data. • MARK status Indicates that the printer is BUSY. Set BUSY conditions with the memory switch. 2) When XON/XOFF control is selected, the signal indicates that the printer is properly connected and ready to receive data from the host. The signal is always SPACE, except in the following cases: • During the period from when power is turned on to when the printer is ready to receive data. • During the self-test.
25	INT	Input	The printer is reset if the signal remains at SPACE for a pulse width of 1 ms or more.

XON/XOFF

When XON/XOFF control is selected, the printer transmits the XON or XOFF signals as follows. The transmission timing of XON/XOFF differs, depending on the setting of the memory switch.

Signal	Printer status	Memory switch 1-3	
		1 (ON)	0 (OFF)
XON	1) When the printer goes online after turning on the power	Transmit	Transmit
	2) When the receive buffer is released from the buffer full state	Transmit	Transmit
	3) When the printer switches from offline to online	—	Transmit
	4) When the printer recovers from an error using some ESC/POS commands	—	Transmit
XOFF	5) When the receive buffer becomes full	Transmit	Transmit
	6) When the printer switches from online to offline	—	Transmit

Code

The hexadecimal numbers corresponding to the XON/XOFF codes are shown below.

- XON code: 11H
- XOFF code: 13H

CAUTION

- When the printer goes from offline to online and the receive buffer is full, XON is not transmitted.
- When the printer goes from online to offline and the receive buffer is full, XOFF is not transmitted.

Ethernet Interface

For information about the ethernet interface, see the UB-E03 Technical Reference Guide.

Setting Conditions for Software Setting Mode

For information about setting the Software Setting Mode, see "Software Setting Mode" on page 78.

Setting Items			Selection of software settings * The initial setting is underlined.
1st page	2nd page	3rd page	
1: Print Current Settings			-
2: Print Density	1: Monochrome		85%, 90%, 95%, 100%, 105%, 110%, 115%
3: Printing Speed			Level 1(Slow) to Level 13(Fast)
4: Serial Interface Settings	1: Baud Rate		2400bps, 4800bps, 9600bps, 19200bps, 38400bps, 57600bps, 115200bps
	2: Parity		None, Odd, Even
	3: Handshaking		DTR/DSR, XON/XOFF
	4: Data Bits		7 bits, 8 bits
	5: Data Receive Error		Print "?", Ignored
5: Auto Paper Feed&Cut at cover close			Enable, Disable
6: Paper Width			80mm, 58mm
8: Default Character	1: Code Page	1: Western Europe, Southern Europe	Page0:PC437(USA,Standard Europe), Page3:PC860(Portuguese), Page11:PC851(Greek), Page14:PC737(Greek), Page15:ISO8859-7(Greek), Page16:WPC1252, Page18:PC852(Latin2), Page19:PC858, Page34:PC855(Cyrillic), Page38:PC869(Greek), Page39:ISO8859-2(Latin2), Page40:ISO8859-15(Latin9), Page45:WPC1250, Page47:WPC1253
		2: Eastern Europe, Northern Europe	Page5:PC865(Nordic), Page17:PC866(Cyrillic#2), Page33:WPC775, Page35:PC861(Icelandic), Page42:PC1118(Lithuanian), Page43:PC1119(Lithuanian), Page44:PC1125(Ukrainian), Page46:WPC1251, Page51:WPC1257
		3: USA Canada	Page0:PC437(USA,Standard Europe), Page4:PC863(Canadian-French)

Setting Items			Selection of software settings * The initial setting is underlined.
1st page	2nd page	3rd page	
8: Default Character (Continued from the previous page)	1: Code Page (Continued from the previous page)	4: Asia	Page1:Katakana, Page20:KU42, Page21:TIS11(Thai), Page26:TIS18(Thai), Page30:TCVN-3(Vietnamese), Page31:TCVN-3(Vietnamese), Page52:WPC1258, Page53:KZ-1048(Kazakhstan)
		5: Turkey, Arabia, Israel	Page12:PC853(Turkish), Page13:PC857(Turkish), Page32:PC720, Page36:PC862(Hebrew), Page37:PC864(Arabic), Page41:PC1098(Farsi), Page48:WPC1254, Page49:WPC1255, Page50:WPC1256
		6: Others	Page2:PC850(Multilingual)
	2: International Character Set	1: The Americas, Europe	USA, France, Germany, Britain, Denmark I, Sweden, Italy, Spain I, Norway, Denmark II, Spain II, Latin America, Slovenia/Croatia
		2: Asia, Arabia	Japan, Korea, China, Vietnam, Arabia
9: Embedded Font Replacement	1: Font A Replacement		Font A(No Replacement), Font B
	2: Font B Replacement		Font A, Font B(No Replacement)
10: USB Interface Settings	1: Class		Vendor Class, Printer Class
	2: USB Power Saving		Enabled, Disabled
11: Buzzer Control	1: Option Buzzer		Enable, Disable
	2: Buzzer Frequency(Error)		Continuous, 1 time, No sound
	3: Sound Pattern(Autocut)		Pattern A, Pattern B, Pattern C, Pattern D, Pattern E
	4: Buzzer Frequency(Autocut)		1 time, No sound
	5: Sound Pattern(Pulse 1)		Pattern A, Pattern B, Pattern C, Pattern D, Pattern E
	6: Buzzer Frequency(Pulse 1)		1 time, No sound
	7: Sound Pattern(Pulse 2)		Pattern A, Pattern B, Pattern C, Pattern D, Pattern E
	8: Buzzer Frequency(Pulse 2)		1 time, No sound
12: Column Emulation			Off, 42 Column Mode

Setting Items			Selection of software settings * The initial setting is underlined.
1st page	2nd page	3rd page	
13: Interface Settings	1: Receive Buffer Capacity		4KB, 45 bytes
	2: BUSY Condition		Receive Buffer Full or Offline, Receive Buffer Full
	3: Auto Line Feed		Always disabled, Always enabled
	4: State to cancel buffer BUSY		Not BUSY = 256 bytes, Not BUSY = 138 bytes
	5: Output Paper-end Signals		Paper End Sensor Enabled, Disabled
	6: Error Signal		Enabled, Disabled
15: Logo Emulation			Off, 180 Dpi Logo Mode
16: Automatic Paper Reduction	1: Upper Margin		Enable, Disable
	2: Lower Margin		Enable, Disable
	3: Blank Line Spacing		25%, 50%, 75%, Not Reduce
	4: Blank Space		25%, 50%, 75%, Not Reduce
	5: Barcode Height		25%, 50%, 75%, Not Reduce
17: Interface Selection			UIB, Built-in USB, Auto
18: Power Supply Unit Capacity			Level 1(Low) to Level 3(High)

Character Code Tables

CAUTION

- The character code tables show only character configurations. They do not show the actual print pattern.
- “SP” in the table shows a space.

Common to All Pages

When International character set (See "International Character Sets" on page 140.) is USA:

HEX	0	1	2	3	4	5	6	7
0	NUL 0	DLE 16	SP 32	0 48	@ 64	P 80	` 96	p 112
1	1	XON 17	! 33	1 49	A 65	Q 81	a 97	q 113
2	2	18	" 34	2 50	B 66	R 82	b 98	r 114
3	3	XOFF 19	# 35	3 51	C 67	S 83	c 99	s 115
4	EOT 4	DC4 20	$ 36	4 52	D 68	T 84	d 100	t 116
5	ENQ 5	NAK 21	% 37	5 53	E 69	U 85	e 101	u 117
6	ACK 6	22	& 38	6 54	F 70	V 86	f 102	v 118
7	7	23	' 39	7 55	G 71	W 87	g 103	w 119
8	8	CAN 24	(40	8 56	H 72	X 88	h 104	x 120
9	HT 9	25	) 41	9 57	I 73	Y 89	i 105	y 121
A	LF 10	26	* 42	: 58	J 74	Z 90	j 106	z 122
B	11	ESC 27	+ 43	; 59	K 75	[91	k 107	{ 123
C	FF 12	FS 28	, 44	< 60	L 76	\ 92	l 108	| 124
D	CR 13	GS 29	- 45	= 61	M 77	] 93	m 109	} 125
E	14	RS 30	. 46	> 62	N 78	^ 94	n 110	~ 126
F	15	31	/ 47	? 63	O 79	_ 95	o 111	SP 127

Page 0 (PC437: USA, Standard Europe)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240
1	ü 129	æ 145	í 161	▓ 177	┴ 193	╤ 209	ß 225	± 241
2	é 130	Æ 146	ó 162	▒ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	å 134	û 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	ï 139	¢ 155	½ 171	╗ 187	╦ 203	▉ 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	╝ 188	╠ 204	■ 220	∞ 236	n 252
D	ì 141	¥ 157	¡ 173	╜ 189	═ 205	▌ 221	φ 237	² 253
E	Ä 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	ε 238	▮ 254
F	Å 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

Page 1 (Katakana)

HEX	8	9	A	B	C	D	E	F
0	ー 128	┴ 144	SP 160	― 176	タ 192	ミ 208	三 224	X 240
1	▬ 129	┬ 145	｡ 161	ア 177	チ 193	ム 209	上 225	円 241
2	▬ 130	┤ 146	「 162	イ 178	ツ 194	メ 210	下 226	年 242
3	■ 131	├ 147	」 163	ウ 179	テ 195	モ 211	丰 227	月 243
4	■ 132	─ 148	、 164	エ 180	ト 196	ヤ 212	◢ 228	日 244
5	■ 133	┼ 149	・ 165	オ 181	ナ 197	ユ 213	◣ 229	時 245
6	■ 134	│ 150	ヲ 166	カ 182	ニ 198	ヨ 214	◥ 230	分 246
7	■ 135	│ 151	ァ 167	キ 183	ヌ 199	ラ 215	◤ 231	秒 247
8	▏ 136	┌ 152	ィ 168	ク 184	ネ 200	リ 216	♠ 232	干 248
9	▌ 137	┐ 153	ゥ 169	ケ 185	ノ 201	ル 217	♥ 233	市 249
A	▌ 138	└ 154	ェ 170	コ 186	ハ 202	レ 218	♦ 234	区 250
B	▌ 139	┘ 155	ォ 171	サ 187	ヒ 203	ロ 219	♣ 235	町 251
C	▌ 140	┌ 156	ャ 172	シ 188	フ 204	ワ 220	● 236	村 252
D	▌ 141	┐ 157	ュ 173	ス 189	ヘ 205	ン 221	O 237	人 253
E	▌ 142	└ 158	ョ 174	セ 190	ホ 206	゛ 222	／ 238	▒ 254
F	┼ 143	┘ 159	ッ 175	ソ 191	マ 207	° 223	＼ 239	SP 255

Page 2 (PC850: Multilingual)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▒ 176	└ 192	ð 208	Ó 224	- 240
1	ü 129	æ 145	í 161	▒ 177	┴ 193	Ð 209	ß 225	± 241
2	é 130	Æ 146	ó 162	▒ 178	┬ 194	Ê 210	Ô 226	‗ 242
3	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	¾ 243
4	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	õ 228	¶ 244
5	à 133	ò 149	Ñ 165	Á 181	┼ 197	ı 213	Õ 229	§ 245
6	å 134	û 150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246
7	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247
8	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248
9	ë 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	· 250
B	ï 139	ø 155	½ 171	╗ 187	╦ 203	█ 219	Ù 235	¹ 251
C	î 140	£ 156	¼ 172	╝ 188	╠ 204	■ 220	ý 236	³ 252
D	ì 141	Ø 157	¡ 173	¢ 189	═ 205	¦ 221	Ý 237	² 253
E	Ä 142	× 158	« 174	¥ 190	╬ 206	Ì 222	¯ 238	■ 254
F	Å 143	ƒ 159	» 175	┐ 191	¤ 207	■ 223	´ 239	SP 255

Page 3 (PC860: Portuguese)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240
1	ü 129	À 145	í 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	é 130	È 146	ó 162	▒ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	â 131	Ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	ã 132	õ 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	Á 134	Ú 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	ê 136	Ì 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	Ê 137	õ 153	Ò 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	Í 139	¢ 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	Ô 140	£ 156	¼ 172	╝ 188	╠ 204	■ 220	∞ 236	n 252
D	ì 141	Ù 157	¡ 173	╜ 189	═ 205	▌ 221	φ 237	² 253
E	Ã 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	ε 238	■ 254
F	Â 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

Page 4 (PC863: Canadian-French)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	¦ 160	░ 176	└ 192	╨ 208	α 224	≡ 240
1	ü 129	È 145	´ 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	é 130	Ê 146	Ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	â 131	Ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	Â 132	Ë 148	¨ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	à 133	Ï 149	¸ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	¶ 134	û 150	³ 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	ç 135	ù 151	¯ 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	ê 136	¤ 152	Î 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	ë 137	Ô 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	ï 139	¢ 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	╝ 188	╠ 204	■ 220	∞ 236	n 252
D	¡ 141	Ù 157	¾ 173	╜ 189	═ 205	▌ 221	φ 237	² 253
E	À 142	Û 158	« 174	╛ 190	╬ 206	▐ 222	ε 238	■ 254
F	§ 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

Page 5 (PC865: Nordic)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240
1	ü 129	æ 145	í 161	▓ 177	┴ 193	╤ 209	ß 225	± 241
2	é 130	Æ 146	ó 162	▓ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	ä 132	ö 148	ñ 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	à 133	ò 149	Ñ 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	å 134	û 150	ª 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	ç 135	ù 151	º 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	ê 136	ÿ 152	¿ 168	╕ 184	╚ 200	╪ 216	Φ 232	° 248
9	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	ï 139	ø 155	½ 171	╗ 187	╦ 203	█ 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	╝ 188	╠ 204	■ 220	∞ 236	n 252
D	ì 141	Ø 157	¡ 173	╜ 189	═ 205	▌ 221	φ 237	² 253
E	Ä 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	ε 238	■ 254
F	Å 143	ƒ 159	¤ 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

Page 11 (PC851: Greek)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	'I 144	ï 160	▒ 176	└ 192	T 208	ζ 224	- 240
1	ü 129	SP 145	Ï 161	▓ 177	┴ 193	Y 209	η 225	± 241
2	é 130	'D 146	ó 162	▒ 178	┬ 194	φ 210	θ 226	U 242
3	â 131	ô 147	ú 163	│ 179	├ 195	X 211	ι 227	φ 243
4	ä 132	ö 148	A 164	┤ 180	─ 196	Ψ 212	κ 228	χ 244
5	à 133	'Y 149	B 165	K 181	┼ 197	Ω 213	λ 229	§ 245
6	'A 134	û 150	Γ 166	Λ 182	Π 198	α 214	μ 230	ψ 246
7	ç 135	ù 151	Δ 167	M 183	P 199	β 215	ν 231	¸ 247
8	ê 136	'Ω 152	E 168	N 184	╚ 200	γ 216	ξ 232	° 248
9	ë 137	Ö 153	Z 169	╣ 185	╔ 201	┘ 217	ο 233	¨ 249
A	è 138	Ü 154	H 170	║ 186	╩ 202	┌ 218	π 234	ω 250
B	ï 139	ά 155	½ 171	╗ 187	╦ 203	▉ 219	ρ 235	Ü 251
C	î 140	£ 156	Θ 172	╝ 188	╠ 204	■ 220	σ 236	Ü 252
D	'E 141	έ 157	I 173	Ξ 189	═ 205	δ 221	ς 237	ώ 253
E	Ä 142	ή 158	« 174	O 190	╬ 206	ε 222	τ 238	▮ 254
F	'H 143	ί 159	» 175	┐ 191	Σ 207	■ 223	΄ 239	SP 255

Page 12 (PC853: Turkish)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▒ 176	└ 192	SP 208	Ó 224	- 240
1	ü 129	ċ 145	í 161	▒ 177	┴ 193	SP 209	ß 225	SP 241
2	é 130	Ċ 146	ó 162	▒ 178	┬ 194	Ê 210	Ô 226	ℓ 242
3	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	ℏ 243
4	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	Ġ 228	˘ 244
5	à 133	ò 149	Ñ 165	Á 181	┼ 197	ı 213	ġ 229	§ 245
6	ĉ 134	û 150	Ğ 166	Â 182	ŝ 198	Í 214	µ 230	÷ 246
7	ç 135	ù 151	ğ 167	À 183	Ŝ 199	Î 215	ħ 231	¸ 247
8	ê 136	İ 152	Ĥ 168	Ş 184	╚ 200	Ï 216	Ħ 232	° 248
9	ë 137	Ö 153	ĥ 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	è 138	Ü 154	SP 170	║ 186	╩ 202	┌ 218	Û 234	· 250
B	ï 139	ĝ 155	½ 171	╗ 187	╦ 203	▉ 219	Ù 235	SP 251
C	î 140	£ 156	Ĵ 172	╝ 188	╠ 204	■ 220	ŭ 236	³ 252
D	ì 141	Ĝ 157	ş 173	Ż 189	═ 205	SP 221	Ŭ 237	² 253
E	Ä 142	× 158	« 174	ż 190	╬ 206	Ì 222	· 238	▮ 254
F	Ĉ 143	ĵ 159	» 175	┐ 191	¤ 207	■ 223	´ 239	SP 255

Page 13 (PC857: Turkish)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▒ 176	└ 192	º 208	Ó 224	- 240
1	ü 129	æ 145	í 161	▓ 177	┴ 193	ª 209	ß 225	± 241
2	é 130	Æ 146	ó 162	▓ 178	┬ 194	Ê 210	Ô 226	SP 242
3	â 131	ô 147	ú 163	│ 179	├ 195	Ë 211	Ò 227	¾ 243
4	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	õ 228	¶ 244
5	à 133	ò 149	Ñ 165	Á 181	┼ 197	€ 213	Õ 229	§ 245
6	å 134	û 150	Ğ 166	Â 182	ã 198	Í 214	µ 230	÷ 246
7	ç 135	ù 151	ğ 167	À 183	Ã 199	Î 215	SP 231	¸ 247
8	ê 136	İ 152	¿ 168	© 184	╚ 200	Ï 216	× 232	° 248
9	ë 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	• 250
B	ï 139	ø 155	½ 171	╗ 187	╦ 203	█ 219	Ù 235	¹ 251
C	î 140	£ 156	¼ 172	╝ 188	╠ 204	▄ 220	ì 236	³ 252
D	ı 141	Ø 157	¡ 173	¢ 189	═ 205	¦ 221	ÿ 237	² 253
E	Ä 142	Ş 158	« 174	¥ 190	╬ 206	Ì 222	¯ 238	■ 254
F	Å 143	ş 159	» 175	┐ 191	¤ 207	▀ 223	´ 239	SP 255

Page 14 (PC737: Greek)

HEX	8	9	A	B	C	D	E	F
0	Α 128	Ρ 144	ι 160	▒ 176	└ 192	╨ 208	ω 224	Ω 240
1	Β 129	Σ 145	κ 161	▒ 177	┴ 193	╤ 209	ά 225	± 241
2	Γ 130	Τ 146	λ 162	▒ 178	┬ 194	╥ 210	έ 226	≥ 242
3	Δ 131	Υ 147	μ 163	│ 179	├ 195	╙ 211	ή 227	≤ 243
4	Ε 132	Φ 148	ν 164	┤ 180	─ 196	╘ 212	ϊ 228	Ϊ 244
5	Ζ 133	Χ 149	ξ 165	╡ 181	┼ 197	╒ 213	ί 229	Ϋ 245
6	Η 134	Ψ 150	ο 166	╢ 182	╞ 198	╓ 214	ό 230	÷ 246
7	Θ 135	Ω 151	π 167	╖ 183	╟ 199	╫ 215	ύ 231	≈ 247
8	Ι 136	α 152	ρ 168	╕ 184	╚ 200	╪ 216	ϋ 232	° 248
9	Κ 137	β 153	σ 169	╣ 185	╔ 201	┘ 217	ώ 233	∙ 249
A	Λ 138	γ 154	ς 170	║ 186	╩ 202	┌ 218	Ά 234	· 250
B	Μ 139	δ 155	τ 171	╗ 187	╦ 203	■ 219	Έ 235	√ 251
C	Ν 140	ε 156	υ 172	╝ 188	╠ 204	■ 220	Ή 236	n 252
D	Ξ 141	ζ 157	φ 173	╜ 189	═ 205	▌ 221	Ί 237	2 253
E	Ο 142	η 158	χ 174	╛ 190	╬ 206	▐ 222	Ό 238	■ 254
F	Π 143	θ 159	ψ 175	┐ 191	╧ 207	■ 223	Ύ 239	SP 255

Page 15 (ISO8859-7: Greek)

HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	SP 160	° 176	Ϊ 192	Π 208	ΰ 224	π 240
1	SP 129	SP 145	‘ 161	± 177	Α 193	Ρ 209	α 225	ρ 241
2	SP 130	SP 146	’ 162	² 178	Β 194	SP 210	β 226	ς 242
3	SP 131	SP 147	£ 163	³ 179	Γ 195	Σ 211	γ 227	σ 243
4	SP 132	SP 148	€ 164	΄ 180	Δ 196	Τ 212	δ 228	τ 244
5	SP 133	SP 149	₯ 165	΅ 181	Ε 197	Υ 213	ε 229	υ 245
6	SP 134	SP 150	¦ 166	Ά 182	Ζ 198	Φ 214	ζ 230	φ 246
7	SP 135	SP 151	§ 167	· 183	Η 199	Χ 215	η 231	χ 247
8	SP 136	SP 152	¨ 168	Έ 184	Θ 200	Ψ 216	θ 232	ψ 248
9	SP 137	SP 153	© 169	Ή 185	Ι 201	Ω 217	ι 233	ω 249
A	SP 138	SP 154	ͺ 170	Ί 186	Κ 202	Ϊ 218	κ 234	ϊ 250
B	SP 139	SP 155	« 171	» 187	Λ 203	Ϋ 219	λ 235	ü 251
C	SP 140	SP 156	¬ 172	Ό 188	Μ 204	ά 220	μ 236	ό 252
D	SP 141	SP 157	173	½ 189	Ν 205	έ 221	ν 237	ύ 253
E	SP 142	SP 158	SP 174	Ύ 190	Ξ 206	ή 222	ξ 238	ώ 254
F	SP 143	SP 159	― 175	Ώ 191	Ο 207	ί 223	ο 239	SP 255

Page 16 (WPC1252)

HEX	8	9	A	B	C	D	E	F
0	€ 128	SP 144	SP 160	° 176	À 192	Đ 208	à 224	ð 240
1	SP 129	‘ 145	¡ 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	’ 130	’ 146	¢ 162	² 178	Â 194	Ò 210	â 226	ò 242
3	ƒ 131	“ 147	£ 163	³ 179	Ã 195	Ó 211	ã 227	ó 243
4	” 132	” 148	¤ 164	´ 180	Ä 196	Ô 212	ä 228	ô 244
5	… 133	• 149	¥ 165	µ 181	Å 197	Õ 213	å 229	õ 245
6	† 134	– 150	¦ 166	¶ 182	Æ 198	Ö 214	æ 230	ö 246
7	‡ 135	— 151	§ 167	· 183	Ç 199	× 215	ç 231	÷ 247
8	ˆ 136	˜ 152	¨ 168	¸ 184	È 200	Ø 216	è 232	ø 248
9	‰ 137	™ 153	© 169	¹ 185	É 201	Ù 217	é 233	ù 249
A	Š 138	š 154	ª 170	º 186	Ê 202	Ú 218	ê 234	ú 250
B	‹ 139	› 155	« 171	» 187	Ë 203	Û 219	ë 235	û 251
C	Œ 140	œ 156	¬ 172	¼ 188	Ì 204	Ü 220	ì 236	ü 252
D	SP 141	SP 157	173	½ 189	Í 205	Ý 221	í 237	ý 253
E	Ž 142	ž 158	® 174	¾ 190	Î 206	Þ 222	î 238	þ 254
F	SP 143	Ÿ 159	¯ 175	¿ 191	Ï 207	ß 223	ï 239	ÿ 255

Page 17 (PC866: Cyrillic #2)

HEX	8	9	A	B	C	D	E	F
0	А 128	Р 144	а 160	▒ 176	└ 192	╙ 208	р 224	Ё 240
1	Б 129	С 145	б 161	▓ 177	┴ 193	╘ 209	с 225	ё 241
2	В 130	Т 146	в 162	▓ 178	┬ 194	╒ 210	т 226	Є 242
3	Г 131	У 147	г 163	│ 179	├ 195	╓ 211	у 227	є 243
4	Д 132	ф 148	д 164	┤ 180	─ 196	╫ 212	ф 228	Ї 244
5	Е 133	Х 149	е 165	╡ 181	┼ 197	╪ 213	х 229	ї 245
6	Ж 134	Ц 150	ж 166	╢ 182	╞ 198	╒ 214	ц 230	ў 246
7	З 135	Ч 151	з 167	╖ 183	╟ 199	╫ 215	ч 231	Ў 247
8	И 136	Ш 152	и 168	╕ 184	╚ 200	╪ 216	ш 232	° 248
9	Й 137	Щ 153	й 169	╣ 185	╔ 201	┘ 217	щ 233	• 249
A	К 138	Ъ 154	к 170	║ 186	╩ 202	г 218	ъ 234	· 250
B	Л 139	Ы 155	л 171	╗ 187	╦ 203	▉ 219	ы 235	√ 251
C	М 140	Ь 156	м 172	╝ 188	╠ 204	■ 220	ь 236	№ 252
D	Н 141	Э 157	н 173	╜ 189	═ 205	▌ 221	э 237	¤ 253
E	О 142	Ю 158	о 174	╛ 190	╬ 206	▐ 222	ю 238	▮ 254
F	П 143	Я 159	п 175	┐ 191	╧ 207	▀ 223	я 239	SP 255

Page 18 (PC852: Latin2)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▒ 176	└ 192	đ 208	Ó 224	- 240
1	ü 129	Ĺ 145	í 161	▒ 177	┴ 193	Đ 209	ß 225	˝ 241
2	é 130	Í 146	ó 162	▒ 178	┬ 194	Ď 210	Ô 226	˛ 242
3	â 131	Ô 147	ú 163	│ 179	├ 195	Ë 211	Ń 227	ˇ 243
4	ä 132	ö 148	Ą 164	┤ 180	─ 196	ď 212	ń 228	˘ 244
5	ů 133	Ľ 149	ą 165	Á 181	┼ 197	Ň 213	ň 229	§ 245
6	ć 134	ľ 150	Ž 166	Â 182	Ă 198	Í 214	Š 230	÷ 246
7	ç 135	Ś 151	ž 167	Ě 183	ă 199	Î 215	š 231	¸ 247
8	ł 136	ś 152	Ę 168	Ş 184	╚ 200	ě 216	Ŕ 232	° 248
9	ë 137	Ö 153	ę 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	ő 138	Ü 154	€ 170	║ 186	╩ 202	┌ 218	ŕ 234	· 250
B	ő 139	Ť 155	Ź 171	╗ 187	╦ 203	█ 219	Ű 235	ű 251
C	î 140	ť 156	Č 172	╝ 188	╠ 204	■ 220	ý 236	Ř 252
D	Ź 141	Ł 157	Ş 173	Ż 189	═ 205	Ţ 221	Ý 237	ř 253
E	Ä 142	× 158	« 174	ż 190	╬ 206	Ů 222	ţ 238	▮ 254
F	Ć 143	Č 159	» 175	┐ 191	¤ 207	■ 223	´ 239	SP 255

Page 19 (PC858: Euro)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▒ 176	└ 192	ð 208	Ó 224	- 240
1	ü 129	æ 145	í 161	▓ 177	┴ 193	Ð 209	ß 225	± 241
2	é 130	Æ 146	ó 162	▓ 178	┬ 194	Ê 210	Ô 226	═ 242
3	â 131	ô 147	ú 163	| 179	├ 195	Ë 211	Ò 227	¾ 243
4	ä 132	ö 148	ñ 164	┤ 180	─ 196	È 212	õ 228	¶ 244
5	à 133	ò 149	Ñ 165	Á 181	┼ 197	€ 213	Õ 229	§ 245
6	å 134	û 150	ª 166	Â 182	ã 198	Í 214	µ 230	÷ 246
7	ç 135	ù 151	º 167	À 183	Ã 199	Î 215	þ 231	¸ 247
8	ê 136	ÿ 152	¿ 168	© 184	╚ 200	Ï 216	Þ 232	° 248
9	ë 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	Ú 233	¨ 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Û 234	· 250
B	ï 139	ø 155	½ 171	╗ 187	╦ 203	▉ 219	Ù 235	¹ 251
C	î 140	£ 156	¼ 172	╝ 188	╠ 204	■ 220	ý 236	³ 252
D	ì 141	Ø 157	¡ 173	¢ 189	═ 205	¦ 221	Ý 237	² 253
E	Ä 142	× 158	« 174	¥ 190	╬ 206	Ì 222	¯ 238	▮ 254
F	Å 143	ƒ 159	» 175	┐ 191	¤ 207	■ 223	´ 239	SP 255

Page 20 (KU42: Thai)

HEX	8	9	A	B	C	D	E	F
0	128	๐ 144	SP 160	ฬ 176	ย 192	เ 208	็ 224	๓ 240
1	129	๑ 145	ก 161	ญ 177	ร 193	แ 209	่ 225	๔ 241
2	130	๒ 146	ข 162	ฎ 178	ฤ 194	โ 210	้ 226	๕ 242
3	131	๓ 147	ค 163	ฏ 179	ล 195	ใ 211	๊ 227	๖ 243
4	132	๔ 148	ฆ 164	ฐ 180	ว 196	ไ 212	๋ 228	๗ 244
5	133	๕ 149	ง 165	ฑ 181	ศ 197	ๅ 213	์ 229	๘ 245
6	134	๖ 150	จ 166	ฒ 182	ษ 198	ๆ 214	ํ 230	๙ 246
7	135	๗ 151	ฉ 167	ณ 183	ส 199	็ 215	๎ 231	๚ 247
8	136	๘ 152	ช 168	ด 184	ห 200	่ 216	๏ 232	๛ 248
9	137	๙ 153	ซ 169	ต 185	ฬ 201	้ 217	๐ 233	๜ 249
A	138	๚ 154	ฌ 170	ถ 186	อ 202	๊ 218	๑ 234	๝ 250
B	139	๛ 155	ญ 171	ท 187	ฮ 203	๋ 219	๒ 235	๞ 251
C	← 140	๜ 156	ฎ 172	ธ 188	ฯ 204	์ 220	๓ 236	๟ 252
D	↑ 141	๝ 157	ฏ 173	น 189	ะ 205	ํ 221	๔ 237	๠ 253
E	→ 142	๞ 158	ฐ 174	บ 190	า 206	๎ 222	๕ 238	๡ 254
F	↓ 143	๟ 159	ฑ 175	ป 191	ำ 207	๏ 223	๖ 239	SP 255

Page 21 (TIS11: Thai)

HEX	8	9	A	B	C	D	E	F
0	◌ั 128	◌็ 144	ไ 160	฿ 176	ภ 192	ะ 208	เ 224	๐ 240
1	◌ะ 129	◌่ 145	ก 161	ฑ 177	ม 193	◌ะ 209	แ 225	๑ 241
2	◌ิ 130	◌้ 146	ข 162	ฒ 178	ย 194	า 210	โ 226	๒ 242
3	◌ี 131	◌๊ 147	ฃ 163	ณ 179	ร 195	ำ 211	ใ 227	๓ 243
4	◌ึ 132	◌๋ 148	ค 164	ด 180	ฤ 196	◌ั 212	ไ 228	๔ 244
5	◌ึ 133	◌์ 149	ฅ 165	ต 181	ล 197	◌็ 213	า 229	๕ 245
6	◌ื 134	◌ั 150	ฆ 166	ถ 182	ฦ 198	◌่ 214	ๅ 230	๖ 246
7	◌ื 135	◌็ 151	ง 167	ท 183	ว 199	◌้ 215	๗ 231	๗ 247
8	◌ุ 136	◌่ 152	จ 168	ธ 184	ศ 200	◌๊ 216	๘ 232	๘ 248
9	◌ู 137	◌้ 153	ฉ 169	น 185	ษ 201	◌๋ 217	๙ 233	๙ 249
A	◌ุ 138	๊ 154	ช 170	บ 186	ส 202	◌์ 218	๚ 234	๚ 250
B	◌ู 139	◌๋ 155	ซ 171	ป 187	ห 203	◌ั 219	฿ 235	๛ 251
C	◌ฺ 140	◌์ 156	ฌ 172	ผ 188	ฬ 204	◌็ 220	฿ 236	๜ 252
D	◌ฺ 141	◌ั 157	ญ 173	ฝ 189	อ 205	◌่ 221	฿ 237	๑ 253
E	◌ฺ 142	◌็ 158	ฎ 174	พ 190	ฮ 206	◌้ 222	฿ 238	๒ 254
F	◌ฺ 143	◌่ 159	ฏ 175	ฟ 191	ฯ 207	฿ 223	๏ 239	SP 255

Page 26 (TIS18: Thai)

HEX	8	9	A	B	C	D	E	F
0	ร 128	๑ 144	SP 160	฿ 176	ภ 192	๐ 208	เ 224	๐ 240
1	ล 129	๒ 145	ก 161	ฑ 177	ม 193	๑ 209	แ 225	๑ 241
2	ว 130	๓- 146	ข 162	ฒ 178	ย 194	า 210	โ 226	๒ 242
3	ศ 131	๓ 147	ฃ 163	ณ 179	ร 195	ำ 211	ใ 227	๓ 243
4	ษ 132	๓๒ 148	ค 164	ด 180	ฤ 196	ิ 212	ไ 228	๔ 244
5	ส 133	๓+ 149	ฅ 165	ต 181	ล 197	ี 213	ๅ 229	๕ 245
6	ห 134	๔- 150	ฆ 166	ถ 182	ฦ 198	ึ 214	ๆ 230	๖ 246
7	ฬ 135	๔๓ 151	ง 167	ท 183	ว 199	ื 215	็ 231	๗ 247
8	อ 136	๔๒ 152	จ 168	ธ 184	ศ 200	ุ 216	่ 232	๘ 248
9	ฮ 137	๔+ 153	ฉ 169	น 185	ษ 201	ู 217	้ 233	๙ 249
A	ฯ 138	๔๑ 154	ช 170	บ 186	ส 202	ฺ 218	๊ 234	๕ 250
B	ะ 139	๕- 155	ซ 171	ป 187	ห 203	฿ 219	๋ 235	๕- 251
C	ั 140	๕๓ 156	ฌ 172	ผ 188	ฬ 204	๕๓ 220	์ 236	๕๓ 252
D	า 141	๕๒ 157	ญ 173	ฝ 189	อ 205	๕๒ 221	ํ 237	๕๒ 253
E	ำ 142	๕+ 158	ฎ 174	พ 190	ฮ 206	๕+ 222	๎ 238	๕+ 254
F	ิ 143	เ 159	ฏ 175	ฟ 191	ฯ 207	๏ 223	๏ 239	SP 255

Page 30 (TCVN-3: Vietnamese)

HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	SP 160	SP 176	SP 192	é 208	SP 224	SP 240
1	SP 129	SP 145	SP 161	SP 177	SP 193	ẹ 209	ỏ 225	ủ 241
2	SP 130	SP 146	SP 162	SP 178	SP 194	ề 210	õ 226	ũ 242
3	SP 131	SP 147	SP 163	SP 179	SP 195	ể 211	ó 227	ú 243
4	SP 132	SP 148	SP 164	SP 180	SP 196	ễ 212	ọ 228	ụ 244
5	SP 133	SP 149	SP 165	à 181	SP 197	ế 213	ồ 229	ừ 245
6	SP 134	SP 150	SP 166	ả 182	ặ 198	ệ 214	ổ 230	ử 246
7	SP 135	SP 151	SP 167	ã 183	ầ 199	ì 215	ỗ 231	ữ 247
8	SP 136	SP 152	ă 168	á 184	ẩ 200	ỉ 216	ố 232	ứ 248
9	SP 137	SP 153	â 169	ạ 185	ẫ 201	SP 217	ộ 233	ự 249
A	SP 138	SP 154	ê 170	SP 186	ấ 202	SP 218	ờ 234	ỳ 250
B	SP 139	SP 155	ô 171	ằ 187	ậ 203	SP 219	ở 235	ỷ 251
C	SP 140	SP 156	ơ 172	ẳ 188	è 204	ĩ 220	ỡ 236	ỹ 252
D	SP 141	SP 157	ư 173	ẵ 189	SP 205	í 221	ớ 237	ý 253
E	SP 142	SP 158	đ 174	ắ 190	ẻ 206	ị 222	ợ 238	ỵ 254
F	SP 143	SP 159	SP 175	SP 191	ẽ 207	ò 223	ù 239	SP 255

Page 31 (TCVN-3: Vietnamese)

HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	SP 160	SP 176	SP 192	É 208	SP 224	SP 240
1	SP 129	SP 145	Ă 161	SP 177	SP 193	Ẹ 209	Ỏ 225	Ủ 241
2	SP 130	SP 146	Â 162	SP 178	SP 194	Ề 210	Õ 226	Ũ 242
3	SP 131	SP 147	SP 163	SP 179	SP 195	Ể 211	Ó 227	Ú 243
4	SP 132	SP 148	SP 164	SP 180	SP 196	Ễ 212	Ọ 228	Ụ 244
5	SP 133	SP 149	SP 165	À 181	SP 197	Ế 213	Ồ 229	Ừ 245
6	SP 134	SP 150	SP 166	Ả 182	Ặ 198	Ệ 214	Ỗ 230	Ử 246
7	SP 135	SP 151	Đ 167	Ã 183	Ầ 199	Ì 215	Ỗ 231	Ữ 247
8	SP 136	SP 152	SP 168	Á 184	Ẩ 200	Ỉ 216	Ố 232	Ứ 248
9	SP 137	SP 153	SP 169	Ạ 185	Ẫ 201	SP 217	Ộ 233	Ự 249
A	SP 138	SP 154	Ê 170	SP 186	Ấ 202	SP 218	Ờ 234	Ỳ 250
B	SP 139	SP 155	Ô 171	Ằ 187	Ậ 203	SP 219	Ở 235	Ỷ 251
C	SP 140	SP 156	Ơ 172	Ẳ 188	È 204	Ĩ 220	Ỡ 236	Ỹ 252
D	SP 141	SP 157	Ư 173	Ẵ 189	SP 205	Í 221	Ớ 237	Ý 253
E	SP 142	SP 158	SP 174	Ắ 190	Ẻ 206	Ị 222	Ợ 238	Ỵ 254
F	SP 143	SP 159	SP 175	SP 191	Ẽ 207	Ò 223	Ù 239	SP 255

Page 32 (PC720: Arabic)

HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	ب 160	▒ 176	└ 192	╨ 208	ض 224	≡ 240
1	SP 129	ّ 145	ة 161	▒ 177	┴ 193	╤ 209	ط 225	ً 241
2	é 130	° 146	ت 162	▒ 178	┬ 194	╥ 210	ظ 226	ٌ 242
3	â 131	Ô 147	ث 163	│ 179	├ 195	╙ 211	ع 227	ٍ 243
4	SP 132	¤ 148	ج 164	┤ 180	─ 196	╘ 212	غ 228	َ 244
5	à 133	— 149	ح 165	╡ 181	┼ 197	╒ 213	ف 229	ُ 245
6	SP 134	Û 150	خ 166	╢ 182	╞ 198	╓ 214	µ 230	ِ 246
7	ç 135	Ù 151	د 167	╖ 183	╟ 199	╫ 215	ق 231	≈ 247
8	ê 136	ء 152	ذ 168	╕ 184	╚ 200	╪ 216	ك 232	° 248
9	ë 137	Ï 153	ر 169	╣ 185	╔ 201	┘ 217	ل 233	• 249
A	è 138	أ 154	ز 170	║ 186	╩ 202	┌ 218	م 234	· 250
B	ï 139	ؤ 155	س 171	╗ 187	╦ 203	▉ 219	ن 235	√ 251
C	î 140	£ 156	ش 172	╝ 188	╠ 204	■ 220	ه 236	n 252
D	SP 141	إ 157	ص 173	╜ 189	═ 205	▌ 221	و 237	2 253
E	SP 142	ئ 158	« 174	╛ 190	╬ 206	▐ 222	ى 238	▮ 254
F	SP 143	ا 159	» 175	┐ 191	╧ 207	▀ 223	ي 239	SP 255

Page 33 (WPC775: Baltic Rim)

HEX	8	9	A	B	C	D	E	F
0	Ć 128	É 144	Ā 160	▒ 176	└ 192	ą 208	Ó 224	- 240
1	ü 129	æ 145	Ī 161	▒ 177	┴ 193	č 209	ß 225	± 241
2	é 130	Æ 146	Ó 162	▒ 178	┬ 194	ę 210	Ō 226	“ 242
3	ā 131	ō 147	Ż 163	│ 179	├ 195	ė 211	Ń 227	¾ 243
4	ä 132	ö 148	ż 164	┤ 180	─ 196	į 212	õ 228	¶ 244
5	ģ 133	Ģ 149	Ź 165	Ą 181	┼ 197	š 213	Õ 229	§ 245
6	å 134	¢ 150	” 166	Č 182	Ų 198	ų 214	µ 230	÷ 246
7	ć 135	Ś 151	¦ 167	Ę 183	Ū 199	ū 215	ń 231	„ 247
8	ł 136	ś 152	© 168	Ė 184	╚ 200	Ž 216	Ķ 232	° 248
9	ē 137	Ö 153	® 169	╣ 185	╔ 201	┘ 217	ķ 233	• 249
A	Ŗ 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ļ 234	· 250
B	ŗ 139	ø 155	½ 171	╗ 187	╦ 203	█ 219	ļ 235	¹ 251
C	ī 140	£ 156	¼ 172	╝ 188	╠ 204	■ 220	Ņ 236	³ 252
D	ź 141	Ø 157	Ł 173	Į 189	═ 205	▌ 221	Ē 237	² 253
E	Ä 142	× 158	« 174	Š 190	╬ 206	▐ 222	Ņ 238	▮ 254
F	Å 143	¤ 159	» 175	┐ 191	Ž 207	■ 223	’ 239	SP 255

Page 34 (PC855: Cyrillic)

HEX	8	9	A	B	C	D	E	F
0	ђ 128	љ 144	а 160	▒ 176	└ 192	л 208	Я 224	- 240
1	Ђ 129	Љ 145	А 161	▒ 177	┴ 193	Л 209	р 225	ы 241
2	ѓ 130	њ 146	б 162	▒ 178	т 194	м 210	Р 226	Ы 242
3	Ѓ 131	Њ 147	Б 163	│ 179	├ 195	М 211	с 227	з 243
4	ё 132	ћ 148	ц 164	┤ 180	─ 196	н 212	С 228	З 244
5	Ё 133	Ћ 149	Ц 165	х 181	┼ 197	Н 213	т 229	ш 245
6	є 134	ќ 150	д 166	Х 182	к 198	о 214	Т 230	Ш 246
7	Є 135	Ќ 151	Д 167	и 183	К 199	О 215	у 231	э 247
8	ѕ 136	ў 152	е 168	И 184	╚ 200	п 216	У 232	Э 248
9	Ѕ 137	Ў 153	Е 169	╣ 185	╔ 201	┘ 217	ж 233	щ 249
A	і 138	џ 154	ф 170	║ 186	╩ 202	г 218	Ж 234	Щ 250
B	І 139	Џ 155	Ф 171	╗ 187	╦ 203	▉ 219	в 235	ч 251
C	ї 140	ю 156	г 172	╝ 188	╠ 204	■ 220	В 236	Ч 252
D	Ї 141	Ю 157	Г 173	й 189	═ 205	П 221	ь 237	§ 253
E	ј 142	ъ 158	« 174	Й 190	╬ 206	я 222	Ь 238	▮ 254
F	Ј 143	Ъ 159	» 175	┐ 191	¤ 207	▀ 223	№ 239	SP 255

Page 35 (PC861: Icelandic)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▒ 176	└ 192	╨ 208	α 224	≡ 240
1	ü 129	æ 145	í 161	▒ 177	┴ 193	╤ 209	ß 225	± 241
2	é 130	Æ 146	ó 162	▒ 178	┬ 194	╥ 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	│ 179	├ 195	╙ 211	π 227	≤ 243
4	ä 132	ö 148	Á 164	┤ 180	─ 196	╘ 212	Σ 228	⌠ 244
5	à 133	þ 149	Í 165	╡ 181	┼ 197	╒ 213	σ 229	⌡ 245
6	å 134	û 150	Ó 166	╢ 182	╞ 198	╓ 214	µ 230	÷ 246
7	ç 135	Ý 151	Ú 167	╖ 183	╟ 199	╫ 215	τ 231	≈ 247
8	ê 136	ý 152	¿ 168	╕ 184	╚ 200	╪ 216	φ 232	° 248
9	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	• 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	Ð 139	ø 155	½ 171	╗ 187	╦ 203	▉ 219	δ 235	√ 251
C	ð 140	£ 156	¼ 172	╝ 188	╠ 204	■ 220	∞ 236	n 252
D	Þ 141	Ø 157	¡ 173	╜ 189	═ 205	▌ 221	ϕ 237	² 253
E	Ä 142	₧ 158	« 174	╛ 190	╬ 206	▐ 222	ε 238	■ 254
F	Å 143	ƒ 159	» 175	┐ 191	╧ 207	▀ 223	∩ 239	SP 255

Page 36 (PC862: Hebrew)

HEX	8	9	A	B	C	D	E	F
0	128	144	160	176	192	208	224	240
1	129	145	161	177	193	209	225	241
2	130	146	162	178	194	210	226	242
3	131	147	163	179	195	211	227	243
4	132	148	164	180	196	212	228	244
5	133	149	165	181	197	213	229	245
6	134	150	166	182	198	214	230	246
7	135	151	167	183	199	215	231	247
8	136	152	168	184	200	216	232	248
9	137	153	169	185	201	217	233	249
A	138	154	170	186	202	218	234	250
B	139	155	171	187	203	219	235	251
C	140	156	172	188	204	220	236	252
D	141	157	173	189	205	221	237	253
E	142	158	174	190	206	222	238	254
F	143	159	175	191	207	223	239	SP 255

Page 37 (PC864: Arabic)

HEX	8	9	A	B	C	D	E	F
0	° 128	β 144	SP 160	٠ 176	¢ 192	ذ 208	ـ 224	ّـ 240
1	· 129	ϖ 145	- 161	١ 177	ء 193	ر 209	ف 225	ّ 241
2	• 130	ϕ 146	ﻵ 162	٢ 178	آ 194	ز 210	ق 226	ن 242
3	√ 131	± 147	£ 163	٣ 179	أ 195	س 211	ك 227	ه 243
4	▒ 132	½ 148	¤ 164	٤ 180	ؤ 196	ش 212	ل 228	ﻫ 244
5	─ 133	¼ 149	ﺃ 165	٥ 181	ﺥ 197	ص 213	م 229	ى 245
6	│ 134	≈ 150	SP 166	٦ 182	ئ 198	ض 214	ن 230	ي 246
7	┼ 135	« 151	€ 167	٧ 183	ا 199	ط 215	ه 231	ﻍ 247
8	┤ 136	» 152	ﻟ 168	٨ 184	ﺑ 200	ظ 216	و 232	ق 248
9	╤ 137	ﻷ 153	ﺏ 169	٩ 185	ة 201	ﻉ 217	ى 233	ﻵ 249
A	├ 138	ﻹ 154	ﺕ 170	ف 186	ﺗ 202	ﻍ 218	ﻱ 234	ﻷ 250
B	┴ 139	SP 155	ﺙ 171	؛ 187	ﺛ 203	ﺍ 219	ﺽ 235	ل 251
C	┐ 140	SP 156	، 172	س 188	ﺝ 204	ﺗ 220	ﻊ 236	ﻙ 252
D	┌ 141	ﻻ 157	ﺝ 173	ﺵ 189	ﺡ 205	÷ 221	ﺥ 237	ي 253
E	└ 142	ﻼ 158	ﺡ 174	ﺻ 190	ﺥ 206	× 222	ﻍ 238	■ 254
F	┘ 143	ـ 159	ﺥ 175	؟ 191	د 207	ﻉ 223	م 239	SP 255

Page 38 (PC869: Greek)

HEX	8	9	A	B	C	D	E	F
0	SP 128	Ί 144	ΐ 160	░ 176	└ 192	Τ 208	ζ 224	240
1	SP 129	Ϊ 145	Ά 161	▒ 177	┴ 193	Υ 209	η 225	± 241
2	SP 130	Ό 146	ά 162	▓ 178	┬ 194	Φ 210	θ 226	‗ 242
3	SP 131	SP 147	έ 163	│ 179	├ 195	Χ 211	ι 227	φ 243
4	SP 132	SP 148	ή 164	┤ 180	─ 196	Ψ 212	κ 228	χ 244
5	SP 133	Ύ 149	Β 165	Κ 181	┼ 197	Ω 213	λ 229	§ 245
6	Ά 134	Ϋ 150	Γ 166	Λ 182	Π 198	α 214	μ 230	ψ 246
7	€ 135	© 151	Δ 167	Μ 183	Ρ 199	β 215	ν 231	¸ 247
8	· 136	Ώ 152	Ε 168	Ν 184	╚ 200	γ 216	ξ 232	° 248
9	¬ 137	² 153	Ζ 169	╣ 185	╔ 201	┘ 217	ο 233	¨ 249
A	¦ 138	³ 154	Η 170	║ 186	╩ 202	┌ 218	π 234	ω 250
B	‘ 139	ά 155	½ 171	╗ 187	╦ 203	▉ 219	ρ 235	Ü 251
C	’ 140	£ 156	Θ 172	╝ 188	╠ 204	■ 220	σ 236	Ű 252
D	Έ 141	έ 157	Ι 173	Ξ 189	═ 205	δ 221	ς 237	ώ 253
E	― 142	ή 158	« 174	Ο 190	╬ 206	ε 222	τ 238	▮ 254
F	Ή 143	ί 159	» 175	┐ 191	Σ 207	■ 223	΄ 239	SP 255

Page 39 (ISO8859-2: Latin2)

HEX	8	9	A	B	C	D	E	F
0	▒ 128	Ľ 144	SP 160	° 176	Ŕ 192	Đ 208	ŕ 224	đ 240
1	▒ 129	⊥ 145	Ą 161	ą 177	Á 193	Ń 209	á 225	ń 241
2	▒ 130	⊤ 146	˘ 162	˛ 178	Â 194	Ň 210	â 226	ň 242
3	│ 131	├ 147	Ł 163	ł 179	Ă 195	Ő 211	ă 227	ő 243
4	┤ 132	─ 148	¤ 164	´ 180	Ä 196	Ô 212	ä 228	ô 244
5	╜ 133	┼ 149	Ľ 165	ľ 181	Ĺ 197	Ő 213	Í 229	ő 245
6	╓ 134	■ 150	Ś 166	ś 182	Ć 198	Ö 214	ć 230	ö 246
7	▉ 135	■ 151	§ 167	ˇ 183	Ç 199	× 215	ç 231	÷ 247
8	© 136	╚ 152	¨ 168	¸ 184	Č 200	Ř 216	č 232	ř 248
9	╣ 137	╔ 153	Š 169	š 185	É 201	Ů 217	é 233	ů 249
A	╠ 138	╩ 154	Ş 170	ş 186	Ę 202	Ú 218	ę 234	ú 250
B	╗ 139	╦ 155	Ť 171	ť 187	Ë 203	Ű 219	ë 235	ű 251
C	╝ 140	╠ 156	Ź 172	ź 188	Ě 204	Ü 220	ě 236	ü 252
D	¢ 141	= 157	- 173	˝ 189	Í 205	Ý 221	í 237	ý 253
E	¥ 142	╬ 158	Ž 174	ž 190	Î 206	Ţ 222	î 238	ţ 254
F	┐ 143	® 159	Ż 175	ż 191	Ď 207	ß 223	ď 239	˙ 255

Page 40 (ISO8859-15: Latin9)

HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	SP 160	° 176	À 192	Ð 208	à 224	ð 240
1	SP 129	SP 145	¡ 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	SP 130	SP 146	¢ 162	² 178	Â 194	Ò 210	â 226	ò 242
3	SP 131	SP 147	£ 163	³ 179	Ã 195	Ó 211	ã 227	ó 243
4	SP 132	SP 148	€ 164	Ž 180	Ä 196	Ô 212	ä 228	ô 244
5	SP 133	SP 149	¥ 165	µ 181	Å 197	Õ 213	å 229	õ 245
6	SP 134	SP 150	Š 166	¶ 182	Æ 198	Ö 214	æ 230	ö 246
7	SP 135	SP 151	§ 167	· 183	Ç 199	× 215	ç 231	÷ 247
8	SP 136	SP 152	š 168	ž 184	È 200	Ø 216	è 232	ø 248
9	SP 137	SP 153	© 169	¹ 185	É 201	Ù 217	é 233	ù 249
A	SP 138	SP 154	ª 170	º 186	Ê 202	Ú 218	ê 234	ú 250
B	SP 139	SP 155	« 171	» 187	Ë 203	Û 219	ë 235	û 251
C	SP 140	SP 156	¬ 172	Œ 188	Ì 204	Ü 220	ì 236	ü 252
D	SP 141	SP 157	- 173	œ 189	Í 205	Ý 221	í 237	ý 253
E	SP 142	SP 158	® 174	Ÿ 190	Î 206	Þ 222	î 238	þ 254
F	SP 143	SP 159	¯ 175	¿ 191	Ï 207	ß 223	ï 239	ÿ 255

Page 41 (PC1098: Farsi)

HEX	8	9	A	B	C	D	E	F
0	SP 128	ﺅ 144	ﺣ 160	▒ 176	╘ 192	ﺥ 208	ﻙ 224	- 240
1	SP 129	ﺋ 145	ﺧ 161	▒ 177	╧ 193	ﻉ 209	ﻛ 225	ﻯ 241
2	، 130	ﺏ 146	ﺧ 162	▒ 178	╤ 194	ﻊ 210	ﮒ 226	ﻳ 242
3	؛ 131	ﺑ 147	ﺩ 163	▒ 179	╞ 195	ﻍ 211	ﮓ 227	ﻴ 243
4	؟ 132	ﭖ 148	ﺫ 164	▒ 180	═ 196	ﺦ 212	ﻝ 228	٥ 244
5	ً 133	ﭘ 149	ﺭ 165	ﺽ 181	╬ 197	ﻎ 213	ﻟ 229	١ 245
6	ﺂ 134	ﺕ 150	ﺯ 166	ﺿ 182	ﻅ 198	ﻏ 214	ﻡ 230	٢ 246
7	ﺂ 135	ﺗ 151	ﮊ 167	ﻁ 183	ﻉ 199	ﻑ 215	ﻣ 231	٣ 247
8	ﺁ 136	ﺙ 152	ﺱ 168	ﻃ 184	╚ 200	ﻒ 216	ﻥ 232	۴ 248
9	ﺍ 137	ﺛ 153	ﺳ 169	╣ 185	╔ 201	ﻝ 217	ﻧ 233	۵ 249
A	ﺎ 138	ﺝ 154	ﺵ 170	║ 186	╩ 202	ﺭ 218	ﻭ 234	۶ 250
B	ﻟ 139	ﺟ 155	ﺷ 171	╗ 187	╦ 203	▉ 219	ﻩ 235	٧ 251
C	ء 140	ﭺ 156	ﺹ 172	╝ 188	╠ 204	■ 220	ﻫ 236	٨ 252
D	أ 141	ﭻ 157	ﺻ 173	╜ 189	═ 205	ﻕ 221	ﻬ 237	٩ 253
E	ﺄ 142	× 158	« 174	ﻇ 190	╬ 206	ﻗ 222	ﺓ 238	▉ 254
F	ﺆ 143	ﺡ 159	» 175	┐ 191	SP 207	■ 223	ﻯ 239	SP 255

Page 42 (PC1118: Lithuanian)

HEX	8	9	A	B	C	D	E	F
0	Ç 128	É 144	á 160	▒ 176	└ 192	ą 208	α 224	≡ 240
1	ü 129	æ 145	í 161	▒ 177	┴ 193	č 209	β 225	± 241
2	é 130	Æ 146	ó 162	▒ 178	┬ 194	ę 210	Γ 226	≥ 242
3	â 131	ô 147	ú 163	│ 179	├ 195	ė 211	π 227	≤ 243
4	ä 132	ö 148	ñ 164	┤ 180	─ 196	į 212	Σ 228	⌠ 244
5	à 133	ò 149	Ñ 165	Ą 181	┼ 197	š 213	σ 229	⌡ 245
6	å 134	û 150	ª 166	Č 182	Ų 198	ų 214	µ 230	÷ 246
7	ç 135	ù 151	º 167	Ę 183	Ū 199	ū 215	τ 231	≈ 247
8	ê 136	ÿ 152	¿ 168	Ė 184	╚ 200	Ž 216	Φ 232	° 248
9	ë 137	Ö 153	⌐ 169	╣ 185	╔ 201	┘ 217	Θ 233	∙ 249
A	è 138	Ü 154	¬ 170	║ 186	╩ 202	┌ 218	Ω 234	· 250
B	ï 139	¢ 155	½ 171	╗ 187	╦ 203	▉ 219	δ 235	√ 251
C	î 140	£ 156	¼ 172	╝ 188	╠ 204	■ 220	∞ 236	n 252
D	ì 141	¥ 157	¡ 173	Į 189	═ 205	▌ 221	φ 237	² 253
E	Ä 142	₧ 158	« 174	Š 190	╬ 206	▐ 222	ε 238	▮ 254
F	Å 143	ƒ 159	» 175	┐ 191	Ž 207	▀ 223	∩ 239	SP 255

Page 43 (PC1119: Lithuanian)

HEX	8	9	A	B	C	D	E	F
0	А 128	Р 144	а 160	▒ 176	└ 192	ą 208	р 224	Ё 240
1	Б 129	С 145	б 161	▒ 177	┴ 193	č 209	с 225	ё 241
2	В 130	Т 146	в 162	▒ 178	┬ 194	ę 210	т 226	≥ 242
3	Г 131	У 147	г 163	│ 179	├ 195	ė 211	у 227	≤ 243
4	Д 132	Ф 148	д 164	┤ 180	─ 196	į 212	ф 228	⌠ 244
5	Е 133	Х 149	е 165	Ą 181	┼ 197	š 213	х 229	⌡ 245
6	Ж 134	Ц 150	ж 166	Č 182	Ų 198	ų 214	ц 230	÷ 246
7	З 135	Ч 151	з 167	Ę 183	Ū 199	ū 215	ч 231	≈ 247
8	И 136	Ш 152	и 168	Ė 184	╚ 200	Ž 216	ш 232	° 248
9	Й 137	Щ 153	й 169	╣ 185	╔ 201	┘ 217	щ 233	∙ 249
A	К 138	Ъ 154	к 170	║ 186	╩ 202	┌ 218	ъ 234	· 250
B	Л 139	Ы 155	л 171	╗ 187	╦ 203	█ 219	ы 235	√ 251
C	М 140	Ь 156	м 172	╝ 188	╠ 204	■ 220	ь 236	n 252
D	Н 141	Э 157	н 173	Į 189	═ 205	▌ 221	э 237	² 253
E	О 142	Ю 158	о 174	Š 190	╬ 206	▐ 222	ю 238	■ 254
F	П 143	Я 159	п 175	┐ 191	Ž 207	■ 223	я 239	SP 255

Page 44 (PC1125: Ukrainian)

HEX	8	9	A	B	C	D	E	F
0	А 128	Р 144	а 160	▒ 176	└ 192	╙ 208	р 224	Ё 240
1	Б 129	С 145	б 161	▒ 177	┴ 193	╤ 209	с 225	ё 241
2	В 130	Т 146	в 162	▒ 178	┬ 194	╥ 210	т 226	Ґ 242
3	Г 131	У 147	г 163	│ 179	├ 195	╙ 211	у 227	ґ 243
4	Д 132	Ф 148	д 164	┤ 180	─ 196	╘ 212	ф 228	Є 244
5	Е 133	Х 149	е 165	╡ 181	┼ 197	╒ 213	х 229	є 245
6	Ж 134	Ц 150	ж 166	╢ 182	╞ 198	╓ 214	ц 230	І 246
7	З 135	Ч 151	з 167	╖ 183	╟ 199	╫ 215	ч 231	і 247
8	И 136	Ш 152	и 168	╕ 184	╚ 200	╪ 216	ш 232	Ї 248
9	Й 137	Щ 153	й 169	╣ 185	╔ 201	┘ 217	щ 233	ї 249
A	К 138	Ъ 154	к 170	║ 186	╩ 202	┌ 218	ъ 234	÷ 250
B	Л 139	Ы 155	л 171	╗ 187	╦ 203	▉ 219	ы 235	± 251
C	М 140	Ь 156	м 172	╝ 188	╠ 204	■ 220	ь 236	№ 252
D	Н 141	Э 157	н 173	╜ 189	═ 205	▌ 221	э 237	¤ 253
E	О 142	Ю 158	о 174	╛ 190	╬ 206	▐ 222	ю 238	▮ 254
F	П 143	Я 159	п 175	┐ 191	╧ 207	▀ 223	я 239	SP 255

Page 45 (WPC1250: Latin 2)

HEX	8	9	A	B	C	D	E	F
0	€ 128	SP 144	SP 160	° 176	Ŕ 192	Đ 208	ŕ 224	đ 240
1	SP 129	‘ 145	ˇ 161	± 177	Á 193	Ń 209	á 225	ń 241
2	’ 130	’ 146	˘ 162	˛ 178	Â 194	Ň 210	â 226	ň 242
3	SP 131	“ 147	Ł 163	ł 179	Ă 195	Ő 211	ă 227	ó 243
4	” 132	” 148	¤ 164	´ 180	Ä 196	Ô 212	ä 228	ô 244
5	… 133	• 149	Ą 165	µ 181	Ĺ 197	Ő 213	Í 229	ő 245
6	† 134	– 150	¦ 166	¶ 182	Ć 198	Ö 214	ć 230	ö 246
7	‡ 135	— 151	§ 167	· 183	Ç 199	× 215	ç 231	÷ 247
8	SP 136	SP 152	¨ 168	¸ 184	Č 200	Ř 216	č 232	ř 248
9	‰ 137	™ 153	© 169	ą 185	É 201	Ů 217	é 233	ů 249
A	Š 138	š 154	Ş 170	ş 186	Ę 202	Ú 218	ę 234	ú 250
B	‹ 139	› 155	« 171	» 187	Ë 203	Ű 219	ë 235	ű 251
C	Ś 140	ś 156	¬ 172	Ľ 188	Ě 204	Ü 220	ě 236	ü 252
D	Ť 141	ť 157	- 173	˝ 189	Í 205	Ý 221	í 237	ý 253
E	Ž 142	ž 158	® 174	ľ 190	Î 206	Ţ 222	î 238	ţ 254
F	Ź 143	ź 159	Ż 175	ż 191	Ď 207	ß 223	ď 239	˙ 255

Page 46 (WPC1251: Cyrillic)

HEX	8	9	A	B	C	D	E	F
0	Ђ 128	ђ 144	SP 160	° 176	А 192	Р 208	а 224	р 240
1	Ѓ 129	‘ 145	ў 161	± 177	Б 193	С 209	б 225	с 241
2	’ 130	’ 146	Ў 162	І 178	В 194	Т 210	в 226	т 242
3	ѓ 131	“ 147	Ј 163	і 179	Г 195	У 211	г 227	у 243
4	” 132	” 148	¤ 164	ґ 180	Д 196	Ф 212	д 228	ф 244
5	… 133	• 149	Ґ 165	µ 181	Е 197	Х 213	е 229	х 245
6	† 134	– 150	¦ 166	¶ 182	Ж 198	Ц 214	ж 230	ц 246
7	‡ 135	— 151	§ 167	· 183	З 199	Ч 215	з 231	ч 247
8	€ 136	SP 152	Ё 168	ё 184	И 200	Ш 216	и 232	ш 248
9	‰ 137	™ 153	© 169	№ 185	Й 201	Щ 217	й 233	щ 249
A	Љ 138	љ 154	Є 170	є 186	К 202	Ъ 218	к 234	ъ 250
B	‹ 139	› 155	« 171	» 187	Л 203	Ы 219	л 235	ы 251
C	Њ 140	њ 156	¬ 172	ј 188	М 204	Ь 220	м 236	ь 252
D	Ќ 141	ќ 157	- 173	Ѕ 189	Н 205	Э 221	н 237	э 253
E	Ћ 142	ћ 158	® 174	ѕ 190	О 206	Ю 222	о 238	ю 254
F	Џ 143	џ 159	Ї 175	ї 191	П 207	Я 223	п 239	я 255

Page 47 (WPC1253: Greek)

HEX	8	9	A	B	C	D	E	F
0	€ 128	SP 144	SP 160	° 176	Ϊ 192	Π 208	Ϋ 224	π 240
1	SP 129	‘ 145	¨ 161	± 177	Α 193	Ρ 209	α 225	ρ 241
2	’ 130	’ 146	Ά 162	² 178	Β 194	SP 210	β 226	ς 242
3	ƒ 131	“ 147	£ 163	³ 179	Γ 195	Σ 211	γ 227	σ 243
4	” 132	” 148	¤ 164	΄ 180	Δ 196	Τ 212	δ 228	τ 244
5	… 133	• 149	¥ 165	µ 181	Ε 197	Υ 213	ε 229	υ 245
6	† 134	– 150	¦ 166	¶ 182	Ζ 198	Φ 214	ζ 230	φ 246
7	‡ 135	— 151	§ 167	· 183	Η 199	Χ 215	η 231	χ 247
8	SP 136	SP 152	¨ 168	Έ 184	Θ 200	Ψ 216	θ 232	ψ 248
9	‰ 137	™ 153	© 169	Ή 185	Ι 201	Ω 217	ι 233	ω 249
A	SP 138	SP 154	ª 170	Ί 186	Κ 202	Ϊ 218	κ 234	ϊ 250
B	‹ 139	› 155	« 171	» 187	Λ 203	Ϋ 219	λ 235	ü 251
C	SP 140	SP 156	¬ 172	Ό 188	Μ 204	ά 220	μ 236	ό 252
D	SP 141	SP 157	- 173	½ 189	Ν 205	έ 221	ν 237	ύ 253
E	SP 142	SP 158	® 174	Ύ 190	Ξ 206	ή 222	ξ 238	ώ 254
F	SP 143	SP 159	― 175	Ώ 191	Ο 207	ί 223	ο 239	SP 255

Page 48 (WPC1254: Turkish)

HEX	8	9	A	B	C	D	E	F
0	€ 128	SP 144	SP 160	° 176	À 192	Ğ 208	à 224	ğ 240
1	SP 129	‘ 145	¡ 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	‚ 130	’ 146	¢ 162	² 178	Â 194	Ò 210	â 226	ò 242
3	ƒ 131	“ 147	£ 163	³ 179	Ã 195	Ó 211	ã 227	ó 243
4	„ 132	” 148	¤ 164	´ 180	Ä 196	Ô 212	ä 228	ô 244
5	… 133	• 149	¥ 165	µ 181	Å 197	Õ 213	å 229	õ 245
6	† 134	– 150	¦ 166	¶ 182	Æ 198	Ö 214	æ 230	ö 246
7	‡ 135	— 151	§ 167	· 183	Ç 199	× 215	ç 231	÷ 247
8	ˆ 136	˜ 152	¨ 168	¸ 184	È 200	Ø 216	è 232	ø 248
9	‰ 137	™ 153	© 169	¹ 185	É 201	Ù 217	é 233	ù 249
A	Š 138	š 154	ª 170	º 186	Ê 202	Ú 218	ê 234	ú 250
B	‹ 139	› 155	« 171	» 187	Ë 203	Û 219	ë 235	û 251
C	Œ 140	œ 156	¬ 172	¼ 188	Ì 204	Ü 220	ì 236	ü 252
D	SP 141	SP 157	173	½ 189	Í 205	İ 221	í 237	ı 253
E	SP 142	SP 158	® 174	¾ 190	Î 206	Ş 222	î 238	ş 254
F	SP 143	Ÿ 159	¯ 175	¿ 191	Ï 207	ß 223	ï 239	ÿ 255

Page 49 (WPC1255: Hebrew)

HEX	8	9	A	B	C	D	E	F
0	€ 128	SP 144	SP 160	° 176	ְ 192	ׇ 208	א 224	ן 240
1	SP 129	‘ 145	¡ 161	± 177	ֱ 193	׈ 209	ב 225	ס 241
2	‚ 130	’ 146	¢ 162	² 178	ֲ 194	׉ 210	ג 226	ע 242
3	ƒ 131	“ 147	£ 163	³ 179	ֳ 195	׊ 211	ד 227	ף 243
4	„ 132	” 148	₪ 164	´ 180	ִ 196	׋ 212	ה 228	פ 244
5	… 133	• 149	¥ 165	µ 181	ֵ 197	׌ 213	ו 229	ץ 245
6	† 134	– 150	¦ 166	¶ 182	ֶ 198	׍ 214	ז 230	צ 246
7	‡ 135	— 151	§ 167	· 183	ַ 199	׎ 215	ח 231	ק 247
8	ˆ 136	˜ 152	¨ 168	¸ 184	ָ 200	׏ 216	ט 232	ר 248
9	‰ 137	™ 153	© 169	¹ 185	ֹ 201	SP 217	י 233	ש 249
A	SP 138	SP 154	× 170	÷ 186	SP 202	SP 218	ך 234	ת 250
B	‹ 139	› 155	« 171	» 187	ֻ 203	SP 219	כ 235	SP 251
C	SP 140	SP 156	¬ 172	¼ 188	ּ 204	SP 220	ל 236	SP 252
D	SP 141	SP 157	173	½ 189	ֽ 205	SP 221	ם 237	SP 253
E	SP 142	SP 158	® 174	¾ 190	־ 206	SP 222	מ 238	SP 254
F	SP 143	SP 159	¯ 175	¿ 191	ֿ 207	SP 223	ן 239	SP 255

Page 50 (WPC1256: Arabic)

HEX	8	9	A	B	C	D	E	F
0	€ 128	ک 144	SP 160	° 176	ـ 192	ذ 208	à 224	ً 240
1	پ 129	‘ 145	، 161	± 177	ء 193	ر 209	ل 225	ٌ 241
2	‚ 130	’ 146	¢ 162	² 178	آ 194	ز 210	â 226	ٍ 242
3	ƒ 131	“ 147	£ 163	³ 179	أ 195	س 211	م 227	َ 243
4	„ 132	” 148	¤ 164	´ 180	ؤ 196	ش 212	ن 228	Ô 244
5	… 133	• 149	¥ 165	µ 181	ل 197	ص 213	ه 229	ُ 245
6	† 134	– 150	¦ 166	¶ 182	ئ 198	ض 214	و 230	ِ 246
7	‡ 135	— 151	§ 167	· 183	ا 199	× 215	ç 231	÷ 247
8	ˆ 136	ک 152	¨ 168	¸ 184	ب 200	ط 216	è 232	ّ 248
9	‰ 137	™ 153	© 169	¹ 185	ة 201	ظ 217	é 233	ù 249
A	ٹ 138	ڑ 154	ھ 170	؛ 186	ت 202	ع 218	ê 234	° 250
B	‹ 139	› 155	« 171	» 187	ث 203	غ 219	ë 235	û 251
C	Œ 140	ۃ 156	¬ 172	¼ 188	ج 204	ـ 220	ى 236	ü 252
D	ۓ 141	SP 157	173	½ 189	ح 205	ف 221	ي 237	SP 253
E	ژ 142	SP 158	® 174	¾ 190	خ 206	ق 222	î 238	SP 254
F	ڈ 143	ں 159	¯ 175	؟ 191	د 207	ك 223	ï 239	ے 255

Page 51 (WPC1257: Baltic Rim)

HEX	8	9	A	B	C	D	E	F
0	€ 128	SP 144	SP 160	° 176	Ą 192	Š 208	ą 224	š 240
1	SP 129	‘ 145	SP 161	± 177	Į 193	Ń 209	į 225	ń 241
2	‚ 130	’ 146	¢ 162	² 178	Ā 194	Ņ 210	ā 226	ņ 242
3	SP 131	“ 147	£ 163	³ 179	Ć 195	Ó 211	ć 227	ó 243
4	„ 132	” 148	¤ 164	´ 180	Ä 196	Ō 212	ä 228	ō 244
5	… 133	• 149	SP 165	µ 181	Å 197	Õ 213	å 229	õ 245
6	† 134	– 150	¦ 166	¶ 182	Ę 198	Ö 214	ę 230	ö 246
7	‡ 135	— 151	§ 167	· 183	Ē 199	× 215	ē 231	÷ 247
8	SP 136	SP 152	Ø 168	ø 184	Č 200	Ų 216	č 232	ų 248
9	‰ 137	™ 153	© 169	¹ 185	É 201	Ł 217	é 233	ł 249
A	SP 138	SP 154	Ŗ 170	ŗ 186	Ź 202	Ś 218	ź 234	ś 250
B	‹ 139	› 155	« 171	» 187	Ė 203	Ū 219	ė 235	ū 251
C	SP 140	SP 156	¬ 172	¼ 188	Ģ 204	Ü 220	ģ 236	ü 252
D	¨ 141	¯ 157	- 173	½ 189	Ķ 205	Ż 221	ķ 237	ż 253
E	ˇ 142	˛ 158	® 174	¾ 190	Ī 206	Ž 222	ī 238	ž 254
F	¸ 143	SP 159	Æ 175	æ 191	Ļ 207	ß 223	ļ 239	˙ 255

Page 52 (WPC1258: Vietnamese)

HEX	8	9	A	B	C	D	E	F
0	€ 128	SP 144	SP 160	° 176	À 192	Đ 208	à 224	đ 240
1	SP 129	‘ 145	¡ 161	± 177	Á 193	Ñ 209	á 225	ñ 241
2	‚ 130	’ 146	¢ 162	² 178	Â 194	̉ 210	â 226	̣ 242
3	ƒ 131	“ 147	£ 163	³ 179	Ă 195	Ó 211	ă 227	ó 243
4	„ 132	” 148	¤ 164	́ 180	Ä 196	Ô 212	ä 228	ô 244
5	… 133	• 149	¥ 165	µ 181	Å 197	Ơ 213	å 229	ơ 245
6	† 134	– 150	¦ 166	¶ 182	Æ 198	Ö 214	æ 230	ö 246
7	‡ 135	— 151	§ 167	· 183	Ç 199	× 215	ç 231	÷ 247
8	̂ 136	̃ 152	¨ 168	̧ 184	È 200	Ø 216	è 232	ø 248
9	‰ 137	™ 153	© 169	¹ 185	É 201	Ù 217	é 233	ù 249
A	SP 138	SP 154	ª 170	º 186	Ê 202	Ú 218	ê 234	ú 250
B	‹ 139	› 155	« 171	» 187	Ë 203	Û 219	ë 235	û 251
C	Œ 140	œ 156	¬ 172	¼ 188	̀ 204	Ü 220	́ 236	ü 252
D	SP 141	SP 157	173	½ 189	Í 205	Ư 221	í 237	ư 253
E	SP 142	SP 158	® 174	¾ 190	Î 206	̃ 222	î 238	đ 254
F	SP 143	Ÿ 159	¯ 175	¿ 191	Ï 207	ß 223	ï 239	ÿ 255

Page 53 (KZ1048: Kazakhstan)

HEX	8	9	A	B	C	D	E	F
0	Ђ 128	ђ 144	SP 160	° 176	А 192	Р 208	а 224	р 240
1	Ѓ 129	‘ 145	¥ 161	± 177	Б 193	С 209	б 225	с 241
2	’ 130	’ 146	¥ 162	І 178	В 194	Т 210	в 226	т 242
3	ѓ 131	“ 147	ə 163	і 179	Г 195	У 211	г 227	у 243
4	” 132	” 148	¤ 164	ө 180	Д 196	Ф 212	д 228	ф 244
5	… 133	• 149	Ө 165	µ 181	Е 197	Х 213	е 229	х 245
6	† 134	– 150	¦ 166	¶ 182	Ж 198	Ц 214	ж 230	ц 246
7	‡ 135	— 151	§ 167	· 183	З 199	Ч 215	з 231	ч 247
8	€ 136	SP 152	Ё 168	ё 184	И 200	Ш 216	и 232	ш 248
9	‰ 137	™ 153	© 169	№ 185	Й 201	Щ 217	й 233	щ 249
A	Љ 138	љ 154	Ғ 170	ғ 186	К 202	Ъ 218	к 234	ъ 250
B	‹ 139	› 155	« 171	» 187	Л 203	Ы 219	л 235	ы 251
C	Њ 140	њ 156	¬ 172	Ә 188	М 204	Ь 220	м 236	ь 252
D	Қ 141	қ 157	- 173	Ң 189	Н 205	Э 221	н 237	э 253
E	һ 142	һ 158	® 174	ң 190	О 206	Ю 222	о 238	ю 254
F	Ұ 143	ұ 159	Ү 175	ү 191	П 207	Я 223	п 239	я 255

Page 255 (User-Defined Page)

HEX	8	9	A	B	C	D	E	F
0	SP 128	SP 144	SP 160	SP 176	SP 192	SP 208	SP 224	SP 240
1	SP 129	SP 145	SP 161	SP 177	SP 193	SP 209	SP 225	SP 241
2	SP 130	SP 146	SP 162	SP 178	SP 194	SP 210	SP 226	SP 242
3	SP 131	SP 147	SP 163	SP 179	SP 195	SP 211	SP 227	SP 243
4	SP 132	SP 148	SP 164	SP 180	SP 196	SP 212	SP 228	SP 244
5	SP 133	SP 149	SP 165	SP 181	SP 197	SP 213	SP 229	SP 245
6	SP 134	SP 150	SP 166	SP 182	SP 198	SP 214	SP 230	SP 246
7	SP 135	SP 151	SP 167	SP 183	SP 199	SP 215	SP 231	SP 247
8	SP 136	SP 152	SP 168	SP 184	SP 200	SP 216	SP 232	SP 248
9	SP 137	SP 153	SP 169	SP 185	SP 201	SP 217	SP 233	SP 249
A	SP 138	SP 154	SP 170	SP 186	SP 202	SP 218	SP 234	SP 250
B	SP 139	SP 155	SP 171	SP 187	SP 203	SP 219	SP 235	SP 251
C	SP 140	SP 156	SP 172	SP 188	SP 204	SP 220	SP 236	SP 252
D	SP 141	SP 157	SP 173	SP 189	SP 205	SP 221	SP 237	SP 253
E	SP 142	SP 158	SP 174	SP 190	SP 206	SP 222	SP 238	SP 254
F	SP 143	SP 159	SP 175	SP 191	SP 207	SP 223	SP 239	SP 255

International Character Sets

Country	ASCII code (Hex)													
	23	24	25	2A	40	5B	5C	5D	5E	60	7B	7C	7D	7E
USA	#	$	%	*	@	[	\	]	^	`	{	|	}	~
France	#	$	%	*	à	°	ç	§	^	`	é	ù	è	¨
Germany	#	$	%	*	§	Ä	Ö	Ü	^	`	ä	ö	ü	β
U.K.	£	$	%	*	@	[	\	]	^	`	{	|	}	~
Denmark I	#	$	%	*	@	Æ	Ø	Å	^	`	æ	ø	å	~
Sweden	#	¤	%	*	É	Ä	Ö	Å	Ü	é	ä	ö	å	ü
Italy	#	$	%	*	@	°	\	é	^	ù	à	ò	è	ì
Spain I	Pt	$	%	*	@	¡	Ñ	¿	^	`	¨	ñ	}	~
Japan	#	$	%	*	@	[	¥	]	^	`	{	|	}	~
Norway	#	¤	%	*	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Denmark II	#	$	%	*	É	Æ	Ø	Å	Ü	é	æ	ø	å	ü
Spain II	#	$	%	*	á	¡	Ñ	¿	é	`	í	ñ	ó	ú
Latin America	#	$	%	*	á	¡	Ñ	¿	é	ü	í	ñ	ó	ú
Korea	#	$	%	*	@	[	₩	]	^	`	{	|	}	~
Slovenia/Croatia	#	$	%	*	Ž	Š	Đ	Ć	Č	ž	š	đ	ć	č
China	#	¥	%	*	@	[	\	]	^	`	{	|	}	~
Vietnum	₫	$	%	*	@	[	\	]	^	`	{	|	}	~
Arabia	#	$	%	*	@	[	\	]	^	`	{	|	}	~